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Nicolas Kohl

Corporate Governance and Market Valuation of Publicly Traded Real Estate Companies

A Theoretical and Empirical Analysis

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To my parents and my brother,
with love and gratitude.

Foreword

Over the past decade and in the context of the current real estate and financial crisis, the discussion on corporate governance has received tremendous attention both in theory and in practice. In a setting characterized by an increasingly aggravating competition for capital, corporate governance has become a crucial success factor for companies that are dependent on external funds.

At the same time, there is only little theoretical knowledge with respect to the complex nature of corporate governance and a lack of valuable recommendations for practitioners. Real estate research, in particular, has scarcely covered the topic, yet, in spite of the peculiarities related to the corporate governance structure of listed property companies.

With his doctoral dissertation, Nicolas Kohl fills the knowledge gap by investigating the significance of corporate governance in the public real estate sector. He specifically examines the relationship between principal corporate governance mechanisms and the market valuation of publicly traded real estate companies across four major European real estate capital markets – the UK, France, the Netherlands and Germany. Thereby, the thesis incorporates an extensive theoretical as well as a state-of-the-art empirical analysis.

As opposed to prior real estate corporate governance studies, Nicolas Kohl makes use of a particular instrumental variable estimation methodology that permits to explicitly account for the complex and dynamic interactions among different corporate governance mechanisms and the simultaneous nature of the process determining corporate governance and firm value.

Overall, with its sophisticated research design, the dissertation of Nicolas Kohl contributes decisively to the emerging international theoretical and empirical real estate corporate governance literature. It is a highly innovative work that provides significant insight into the corporate governance structure of European publicly traded real estate companies. Without any doubt, the obtained results will be very useful in the academic debate on corporate governance as well as for the strategic decision-making of top-managers of listed property companies and investors.

We are convinced that this dissertation will become widely accepted by researchers and practitioners and hope that it provides impetus to further research on this topic.

Prof. Dr. Karl-Werner Schulte HonRICS CRE

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Preface

The idea for this doctoral thesis was born during my first two years working for the Chair of Real Estate Management at the University of Regensburg. After having had the opportunity to participate in a variety of interesting projects in the field of real estate capital markets and diverse discussions with investment bankers, consultants and corporate managers, I soon became aware of the significance of corporate governance in today's equity markets. At the same time, I realized that the topic had been largely unexplored in real estate research with the exception of a very limited number of theoretical as well as empirical corporate governance studies that are exclusively focusing on US REITs. However, given the fact that publicly traded real estate companies, as opposed to listed companies from other business sectors, reveal unique agency issues and dispose of a distinct governance structure, more extensive research on the issue is necessary with respect to public real estate markets.

In response to the lack of corporate governance research in real estate literature, this dissertation is aimed to theoretically and empirically investigate the link between a set of principal corporate governance mechanisms and the market valuation of publicly traded real estate companies across the major European real estate capital markets. The findings of this thesis have important practical implications for strategic decision-making of both managers of listed property companies as well as investors.

There is a number of individuals that deserve special appreciation for supporting me throughout the lengthy process of successfully completing this doctoral thesis. Foremost, I wish to thank my dissertation chairman and academic mentor, Prof. Dr. Wolfgang Schäfers, for his unwavering support and for continuously challenging me in a way that made me excel to my full potential. Getting the chance to learn from his outstanding analytical and didactic skills, his knowledge as well as his professional experiences was invaluable to the accomplishment of my study. After working with Prof. Dr. Schäfers for three years, it is now clear to me why he is at the top of his field, both academically and professionally.

In addition, I would like to express my sincere appreciation to Prof. Dr. Klaus Röder for taking on the co-chairmanship of the advisory committee for my doctoral thesis. His comprehensive knowledge on capital markets and his constructive comments in a number of meetings from the first presentation of my dissertation project to the final version of the thesis were very helpful to me.

Another person that deserves special recognition is Prof. Dr. Rolf Tschernig who provided me with excellent guidance and assistance concerning the econometric model and diverse test statistics. Therefore, I am particularly grateful. Furthermore, I owe special thanks to Dr. Jürgen Ernstberger and Dr. Andreas Schillhofer for their helpful comments and advice throughout the preparation of the dissertation. I am also pleased to acknowledge the outstanding commitment of Kai Schulte who devoted long hours to assist me in the collection of annual report data relevant for the construction of the real estate transparency index.

Moreover, my thanks go to my doctoral candidate colleagues and friends who made the time in Regensburg a truly memorable experience. In this regard, I want to particularly thank Michael Trübestein, Johannes Högner, Dr. Florian Egger, Stefanie Forster-Kraus, Claudia Nebauer, Tobias Pfeffer, Helmut Schleich and all my other colleagues who provided distraction and supported me during my dissertation time.

I consider myself very fortunate to have had the opportunity to meet and work with all these outstanding people. It is hard to believe that a brighter and more enjoyable group of individuals can be assembled anywhere else. Undoubtedly, without their presence and assistance the task of writing my thesis would have been far more arduous.

Finally and most importantly, I would like to thank my parents for having made my previous education possible and for encouraging me in all my decisions and endeavors. Together with my beloved brother, they are the ones I know I can count upon when it gets tough. My gratefulness for their ongoing support in all aspects and stages of life is invaluable to me and cannot be expressed with words alone. This dissertation is dedicated to them.

NICOLAS KOHL

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List of Abbreviations

2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares
CalPERS	California Public Employees' Retirement System
CAPM	Capital Asset Pricing Model
CEO	Chief Executive Officer
CG	Corporate Governance
CGM	Corporate Governance Mechanism
DCF	Discounted Cash Flow
Diss.	Dissertation
DIX	Deutscher Immobilien Index (German Property Index)
EBITDA	Earnings before Interests, Taxes, Depreciation and Amortization
ECGI	European Corporate Governance Institute
ed.	editor
e.g.	exempli gratia (latin term for "for example")
EPRA	European Public Real Estate Association
EPS	Earnings per Share
ERV	Estimated Rental Value
et al.	et alia (latin term for "and others")
f.	following
FBI	Fiscale Beleggingsinstelling
FCF	Free Cash Flow
FFO	Funds from Operations
FTSE	Financial Times and the London Stock Exchange

GAAP	Generally Accepted Accounting Principles
GLS	Generalized Least Squares
GMI	Governance Metrics International
GMM	Generalized Method of Moments
GPR	Global Property Research
H	Hypothesis
IAS	International Accounting Standards
IASB	International Accounting Standards Board
ICG	Initiative Corporate Governance der Deutschen Immobilien-wirtschaft
IFRS	International Financial Reporting Standards
IPD	Investment Property Databank
IRRC	Investor Responsibility Research Center
ISS	Institutional Shareholder Services
IV	Instrument Variable
IVS	International Valuation Standards
IVSC	International Valuation Standards Committee
M&A	Mergers and Acquisitions
M/B	Market-to-Book ratio
NAREIT	National Association of Real Estate Investment Trusts
NAV	Net Asset Value
NBER	National Bureau of Economic Research
No.	Number
NYSE	New York Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares

p.a.	per annum (latin term for “per year”)
P/E	Price-Earnings ratio
Q	Tobin’s Q ratio
R^2	Coefficient of determination
REIT	Real Estate Investment Trust
RICS	Royal Institution of Chartered Surveyors
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment
SEC	Securities and Exchange Commission
SIIC	Société d’Investissements Immobiliers Cotée
S&P	Standard & Poor’s
Std. Dev.	Standard Deviation
TV	Terminal Value
UK	United Kingdom
US	United States
USA	United States of America
USD	US Dollar
Vol.	Volume
vs.	versus
WACC	Weighted Average Cost of Capital
WLS	Weighted Least Squares

1 Introduction

1.1 Motivation for the Study

Companies that are publicly traded on a stock exchange are typically characterized by a separation of ownership and control. Professional managers are responsible for operational and strategic decision making while shareholders merely provide the capital and act as residual risk takers of the company.[1] In this constellation, managers are supposed to run the company on behalf of shareholders with the objective to maximize equity value on a long-term basis.[2] However, managers sometimes pursue their own interest by extracting private benefits at the cost of shareholders.[3] In recent years, numerous examples of mismanagement and financial fraud have been covered by the media, e.g. Enron, WorldCom and Siemens, to name just a few.

In a setting of intense competition for international capital, companies diligently have to respond to an increasing demand by investors for higher transparency and more effective mechanisms of corporate control. In this context, the topic of corporate governance has attracted major attention in the professional sphere and across different areas of academic research.[4]

Particularly, institutional investors, as being influential participants in today's global equity markets, highly appreciate "good" firm-specific corporate governance. According to a McKinsey survey from 2002, addressing more than 200 institutional investors with investments across the world, corporate governance is considered as important as key financial indicators by more than 50% of the respondents. At the same time, these institutional investors declare that they are willing to pay a premium of up to 30% for companies with "good" corporate governance structures.[5] In other words, companies that do not care for corpo-

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1 See Berle/Means (1932), pp. 119f; Gordon (1945), p. 47.

2 See Jensen (2001), p. 299.

3 See Berle/Means (1932), p. 333; Stiglitz (1985), p. 134; Williamson (1985), p. 312; Hart/Moore (1995), p. 568.

4 See Shleifer/Vishny (1997), p. 737.

5 See McKinsey & Company (2002).

rate governance and reveal below-average governance structures will eventually be punished with lower market valuations.

The discussion on agency conflicts resulting from the separation of ownership and control as well as on governance mechanisms to reduce related agency costs have been subject to academic literature for a long time. Since Smith (1776) and Berle/Means (1932) addressed potential conflicts of interest between management and shareholders of companies, the understanding on key issues of corporate governance has improved. Nevertheless, a well-developed theory about the complex nature of corporate governance is still lacking.[6]

From a theoretical as well as a professional point of view an important issue with regard to corporate governance is whether it is rewarded by capital market participants in terms of higher market valuations. There is a need for decision makers of publicly traded companies and for investors to better understand how corporate governance mechanisms interact and how different corporate governance structures affect the market value of the firm. The information may serve managers to adequately adjust the corporate governance structure of their companies and to implement a corporate governance guided management strategy that increases shareholder value. Contrariwise, investors may use this knowledge in their stock selection process to adequately supplement their portfolios.

While general finance literature includes numerous empirical studies on the impact of corporate governance on firm value across different capital markets around the world, academic work on the topic is still embryonic in real estate literature and therefore requires further theoretical elaboration and empirical scrutiny.

The question remains why to specifically focus on the public real estate sector. Prior research by Gillan et al. (2003) provides evidence that corporate governance structures differ across industries which basically justifies a closer examination of the interrelation of different governance mechanisms and their

[6] See Larcker et al. (2007), p. 965.

significance in predicting the market value of the firm within an industry. As opposed to listed companies from other business sectors, publicly traded real estate companies offer a unique experimental laboratory in corporate governance research since they reveal a unique governance structure.[7] This uniqueness stems from the peculiarities of real estate as an asset class and the special regulatory requirements that go along with a tax-transparent REIT structure as a specific form of publicly traded real estate companies.[8] In this context, it remains interesting to find out which corporate governance mechanisms play a significant role in the governance structure of publicly traded real estate companies.

[7] See Sagalyn (1996), p. 35; Friday (1997), p. 8; Bebchuk et al. (2005), p. 16; Feng et al. (2005), p. 282; Eichholtz/Kok (2008), p. 142; Ghosh/Sirmans (2006), p. 328.

[8] See for instance Sagalyn (1996), p. 35.

1.2 Objective of Analysis

This dissertation is intended to theoretically and empirically analyze the impact of corporate governance on the market valuation of publicly traded real estate companies across the four major European real estate capital markets: the UK, France, the Netherlands and Germany.

The study is supposed to complement contemporary real estate literature in four basic ways. First, the focus of the investigation is placed on a European sample. Prior empirical real estate corporate governance research of that kind does only exist for US samples. Second, instead of concentrating on single corporate governance provisions in isolation or relying on self-constructed or professionally prepared corporate governance indices, which are likely to be inadequate proxies for a multi-dimensional and dynamic corporate governance construct, a large set of widely accepted corporate governance mechanisms is applied. Third, the transparency of real estate-specific disclosure, measured on the basis of the EPRA Best Practice Recommendations, a well recognized industry standard for a more transparent real estate-specific disclosure, is explicitly taken into account as a separate governance mechanism. Finally, the econometric problem of joint endogeneity is addressed by the use of instrumental variable estimation treating all corporate governance mechanisms as endogenous. More specifically, for the purpose of the analysis a simultaneous system of equations is specified that is estimated using three-stage least squares (3SLS). This approach permits to explicitly consider any bi-directional interrelations between the single corporate governance mechanisms and firm value.

The main objectives of the analysis are, on the one hand, to provide evidence that “good” corporate governance leads to higher market values and, on the other hand, to investigate which corporate governance mechanisms are economically relevant in order to provide decision-makers with a road map on how to increase shareholder value and to offer investors a guideline on which companies to select for their portfolios.

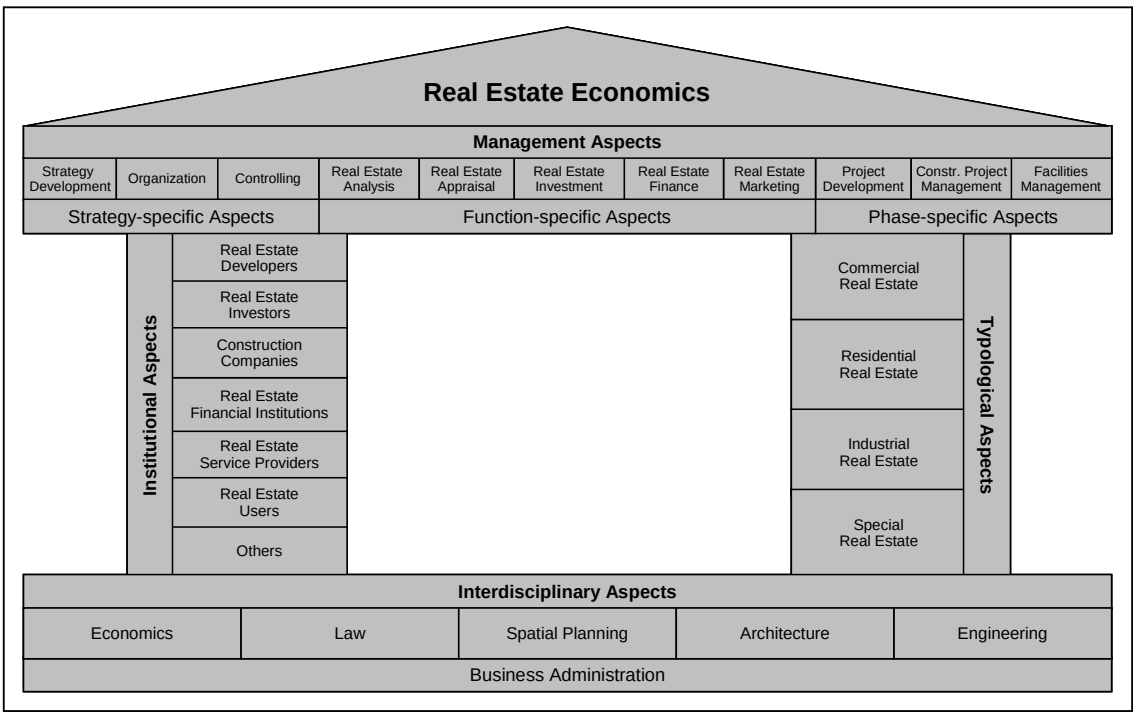
1.3 Research Questions and General Theoretical Frame of Reference

With regard to corporate governance of publicly traded real estate companies in Europe, the study at hand is supposed to address the following research questions:

- Is there a relationship between firm-specific corporate governance and the market valuation of publicly traded real estate companies?
- Does “good” corporate governance imply a higher valuation by the capital market? Or do publicly traded real estate companies with higher market valuations dispose of better governance structures?
- If there is a causal relationship between corporate governance and capital market valuation, is it economically relevant for decision makers of respective companies or for investors?
- Is a greater use of particular corporate governance mechanisms positively related to the valuation of publicly traded real estate companies by the capital market?
- Do complementary effects and substitution effects exist among different corporate governance mechanisms?
- Which consequences can be derived for a corporate governance-guided management strategy in the real estate sector as well as for the investment strategy of real estate investors?

The overall theoretical frame of reference for this dissertation is the academic discipline of real estate economics which is represented by the “House of Real Estate Economics” (see figure 1), originally developed by Schulte/Schäfers (1995/97).

Figure 1: House of Real Estate Economics



Source: Schulte/Schäfers (1997), p. 17.

The field of real estate economics deals with the explanation and the design of real estate-related decision-making of economic agents and is aimed to provide valuable recommendations on how to improve the decision-making process of managers in the real estate sector. Since the real estate business involves expertise from diverse fields, the discipline of real estate economics follows an interdisciplinary approach, accounting for a variety of academic disciplines, including business administration, economics, law, spatial planning, architecture and engineering.

Being the principal subject of investigation in this thesis, corporate governance only concerns selected elements of the House of Real Estate Economics. In terms of the interdisciplinary aspects, the topic is subject to the academic disciplines of business administration, economics and law. In line with the understanding of the term in the context of this doctoral thesis, corporate governance is primarily concerned with real estate investors and publicly traded real estate companies that are classified as the institutional aspects in figure 1. With respect to the management aspects, corporate governance generally has to be

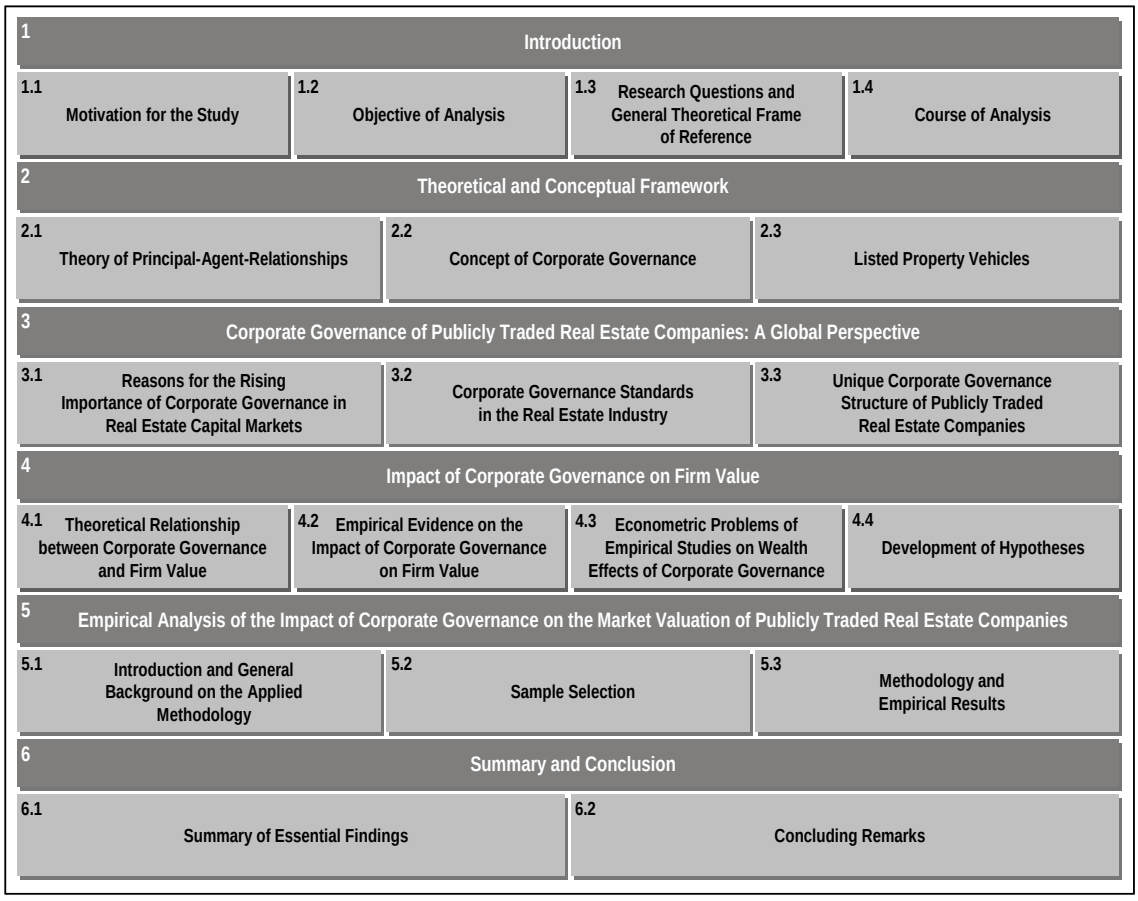
attributed to the function of strategy development as part of the strategy-specific aspects, for the topic has major implications for the strategic management of listed property companies.

Providing the basic theoretical framework, the House of Real Estate Economics is complemented by the principal-agent theory as well as the concept of corporate governance which will be presented in further detail in chapters 2.1 and 2.2, respectively.

1.4 Course of Analysis

The dissertation is basically composed of six chapters (see figure 2) which are briefly summarized in the following paragraphs.

Figure 2: Summary of Contents



Source: Own illustration.

Subsequent to the introduction in chapter 1, chapter 2 provides the theoretical and conceptual foundations necessary for a comprehensive understanding of the analysis subject to this doctoral thesis. It specifically describes the fundamental aspects of agency theory, corporate governance and the link between these two concepts. Furthermore, it defines the different types of listed property vehicles being examined in the course of this dissertation.

Following the rather general elaboration on corporate governance in chapter 2, chapter 3 is supposed to illustrate the peculiarities of corporate governance

in the public real estate sector that justify an empirical investigation of the governance setting of publicly traded real estate companies. After a brief enumeration of some general developments pointing to an increased significance of corporate governance in listed property markets, the uniqueness of the governance structure of listed property companies is outlined.

With regard to the empirical analysis in chapter 5, chapter 4 generally deals with the impact of corporate governance on firm value, which is a highly relevant issue in theory as well as in practice. In addition to a brief elaboration on the theoretical relationship between corporate governance and corporate value, the chapter presents an overview of selected empirical corporate governance studies in finance and real estate literature. Afterwards, some major econometric problems of prior empirical corporate governance studies are pointed out that need to be addressed in contemporary corporate governance research. At the end of chapter 4, the hypotheses of the thesis that need to be tested by the empirical investigation in the subsequent chapter, are developed based on the previous theoretical argumentation and the empirical findings of prior corporate governance research.

Chapter 5 then presents the empirical analysis of the study including the reasoning for the sample selection, the definition and descriptive statistics of the variables, a comprehensive description of the estimation method, the specification of the econometric models and the empirical results.

Chapter 6 eventually provides a summary of the essential findings of the study as well as some concluding remarks.

2 Theoretical and Conceptual Framework

2.1 Theory of Principal-Agent Relationships

In academic literature, the principal-agent theory is generally considered to be the starting point for a theoretical discussion on corporate governance. Therefore, chapter 2.1 is intended to present the basic ideas behind that particular theoretical frame of reference.

2.1.1 Separation of Ownership and Control in the Modern Corporation

In the early days of industrialization companies tended to be privately-owned entities that were managed by their founders based on their own best interest. These companies were limited in size by the personal wealth of their respective owners.[9] Technological advances along with the expansion of markets increased the scale and complexity of companies. In order to finance new technologies necessary to capture economies of scale, additional capital, far beyond the means of individual entrepreneurs, was required.[10] These circumstances paired with the mobilization of property interests through the development of public capital markets lead to an increasing professionalization of management and dispersion of shareholdings, ultimately resulting in a growing separation of corporate ownership[11] and corporate control.[12]

This new form of firm organization, that Berle/Means (1932) referred to as the “modern corporation”, is characterized by shareholders who provide capital

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[9] See Berle/Means (1932), p. 2.

[10] See for instance Baumol (1959), pp. 96f and Thompson (1964), p. 21. For a more detailed description of the development and the changing process of production and distribution as well as the ways in which they have been managed see Chandler (1977).

[11] According to Fama (1980), p. 290, ownership of capital should not be confused with ownership of the firm. He emphasizes the irrelevance of the concept of ownership of the firm referring to the “nexus of contracts” perspective which considers the firm as a set of contracts covering the way inputs are joined to create outputs and the way receipts from outputs are shared among inputs. This notion seems to be important in order to understand that shareholders do not exercise direct control over a firm’s assets or decisions. Instead of being considered as the owners of the firm they rather should be regarded as its “residual risk takers”, the party that has the most to lose in case the company fails. For further elaboration on the concept of residual risk taking in public companies see Alchian/Demsetz (1972) and Fama/Jensen (1983a, 1983b), among others.

[12] See Berle/Means (1932), pp. 4f; Gordon (1945), pp. 23, 28.

in return for stock, and professional managers who direct the company based on their convictions of how best to employ the capital entrusted to them.[13] The organizational structure of the modern corporation has some decisive advantages for both, shareholders as well as managers. Shareholders, on the one side, are able to participate in any profits arising from value creation of entrepreneurial activities even though they lack the necessary managerial skills and experiences.[14] In addition, they are able to benefit from the limited liability feature of equity claims in corporations[15] and the cost efficiencies resulting from the delegation of decision control[16]. Managers, on the other side, can pursue profitable business opportunities even though they lack large personal wealth.[17]

Nevertheless, the separation of ownership and control also comes at a cost. Owners of large public companies, as opposed to owners who manage their own firm, cannot initiate or implement managerial decisions. Their participation is basically limited to voting at shareholder meetings.[18] As a consequence, the value of their stake in the company depends entirely on the aptitude and willingness of the managers, in other words, on factors and forces they cannot directly influence. Since the management does not bear a major share of the wealth effects of strategic and operational decisions their interests may not always be in line with those of shareholders.[19] This would seem to imply that corporate resources are not entirely used in the pursuit of shareholder wealth. The conflicts arising from this situation create a major problem for economic efficiency and have been subject to academics for a long time. A theoretical frame of reference analyzing potential conflicts of interest between managers and shareholders is commonly known as agency theory which will be further elaborated in the following chapters.

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[13] See Millstein/MacAvoy (1998), p. 1292.

[14] See Shleifer/Vishny (1997), p. 740.

[15] See Alchian/Demsetz (1972), p. 788.

[16] See Alchian/Demsetz (1972), p. 788; Fama/Jensen (1983a), p. 308.

[17] See Fama/Jensen (1983b), p. 333; Shleifer/Vishny (1997), p. 740.

[18] See Gordon (1945), p. 160.

[19] See Berle/Means (1932), pp. 6f; Fama/Jensen (1983a), p. 304; Hart (1983), p. 366.

2.1.2 Classification of the Agency Theory within Economic Literature

In addition to property rights and transaction cost theory, agency theory is part of the new institutional economics research tradition introducing what is generally called the “new theory of the firm”. In contrast to neo-classical economics, new institutional economics explicitly accounts for market imperfections to describe, explain and predict economic relationships.

Neo-classical theory is based on the assumption of perfect capital markets, which permit a frictionless exchange of property rights. According to Modigliani/Miller (1958), perfect capital markets are characterized by the non-existence of transaction and information costs, among others. This implies, on the one hand, that markets can be accessed and used in order to transfer property rights at no cost and, on the other hand, that no information asymmetries exist between market participants, permitting transactions to take place instantaneously without loss of efficiency.[20] While treating the firm as a “black box”, adherents to the neo-classical theory believe that only the market is capable to organize efficient contracting.

However, markets in modern economies deviate from the neo-classical ideal due to a variety of distortionary forces, like transaction costs and information asymmetries that prevent the market mechanisms to work efficiently.[21] Based on this understanding of capital markets, new institutional economics provides a theoretical framework permitting to analyze the firm itself while focusing on the minimization of transaction costs[22] and information asymmetries. In this context, researchers are concerned with the efficient design of institutions, such as contracts and organizational structures, and their impact on the behavior of economic agents which is basically assumed to be rationally and morally bounded.[23] New institutional economists conceive the firm as a legal

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[20] See Achleitner (2001), pp. 45f.

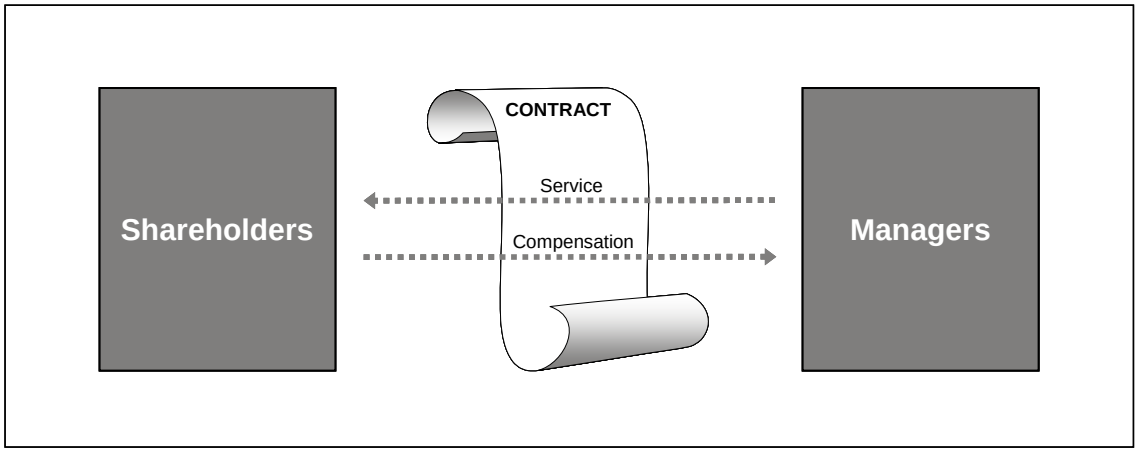
[21] See Stigler (1967), pp. 290f; Williamson (1985), pp. 299f; Stein (2003), p. 114.

[22] See Learmount (2002), p. 4. This notion was originally brought forward by Coase (1937), but has been further developed by Williamson (1985).

[23] See Picot et al. (2005), pp. 45f. For the notion of bounded rationality see Simon (1957).

construct which serves as a nexus for a set of contracts between individuals[24], e.g. managers and shareholders (see figure 3).[25]

Figure 3: Simplified Illustration of the Relationship between Shareholders and Managers



Source: Own illustration.

These contracts are considered incomplete[26] in the sense that the rights of the contracting parties cannot be precisely incorporated for all future contingencies[27], which may lead to conflicts between the parties in case of diverging interests.[28] The analysis of such conflicts of interest between economic agents is subject to the agency theory that emerged from the seminal papers of Spence/Zeckhauser (1971), Alchian/Demsetz (1972), Ross (1973) and Jensen/Meckling (1976). Agency theory has basically developed along two lines: the "positive theory of agency" and the "principal-agent theory".[29] While the principal-agent theory is a more general theoretical stream, that focuses on dif-

[24] See Jensen/Meckling (1976), p. 310; Fama (1980), p. 290. The so-called contractual view of the firm originated in the work of Coase (1937) and was further developed by Jensen/Meckling (1976) and Fama/Jensen (1983a, 1983b).

[25] In most general terms, shareholders and managers sign a contract that specifies what the managers are supposed to do with the capital and how the returns are divided between them and the shareholders; see Shleifer/Vishny (1997), p. 741.

[26] For a more comprehensive elaboration on the notion of incomplete contracts see Grossman/Hart (1986) and Hart/Moore (1990).

[27] See Shleifer/Vishny (1997), p. 741; Rudolph (2006), p. 141.

[28] Grossman/Hart (1986) explain that the difficulty to design complete contracts creates room for agents to behave opportunistically.

[29] See Jensen (1983), p. 334.

ferent principal-agent relationships, such as the ones between employer and employee, lawyer and client, buyer and supplier[30], the positivist stream exclusively investigates the relationship between managers and shareholders in large companies. In contrast to the principal-agent literature, the positive agency literature is usually less abstract and mathematical and more empirically oriented.[31]

[30] See for instance Harris/Raviv (1978).

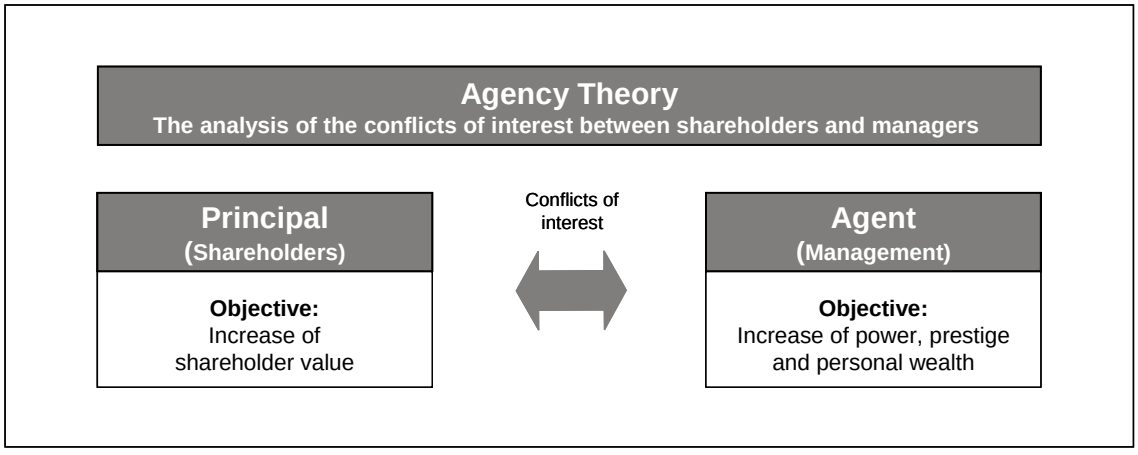
[31] See Jensen (1983), p. 334; Eisenhardt (1989), p. 59.

2.1.3 Definition and Premises of the Principal-Agent Relationship

Jensen/Meckling (1976) generally define an agency relationship as a bilateral contract under which one party (principal) mandates another party (agent) to perform some kind of service by delegating decision making authority.[32] As previously indicated in chapter 2.1.2, a variety of different agency relationships exist in the corporate setting. Due to the focus of this doctoral thesis, the attention of the subsequent examination is confined to the contracting relationship between shareholders (principals) and managers (agents) of the public corporation following the positive agency theory.

Being the agent in the above mentioned relationship, managers are expected to use the privileges and powers entrusted to them exclusively for the benefit of the shareholders as their interest appears.[33] In line with shareholder value theory[34], there is the widespread conviction that managers are supposed to direct the company on behalf of the shareholders with the primary objective to maximize profit[35] or, more precisely, shareholder value[36].

Figure 4: Illustration of the Conflicts of Interest between Shareholders and Management



Source: Own illustration.

[32] See Jensen/Meckling (1976), p. 308.

[33] See Berle (1931), p. 1049; Berle/Means (1932), p. 333.

[34] For further reading on shareholder value theory it is referred to Rappaport (1981, 1986).

[35] See Berle/Means (1932), pp. 119ff; Baumol (1959), p. 51.

[36] See Jensen (2001), p. 299.

However, due to incomplete contracts and diverging interests and objectives (see figure 4) managers may not, and often do not, act in the best interest of shareholders.[37] Since managers are not able to capture a major share of the wealth effects of their decisions they have obviously less incentives to maximize equity value than if they were the principals of the company.[38] This situation of conflict has already been pointed out by Adam Smith in his seminal work "The wealth of nations", originally published in 1776. Therein he states:

> *"The directors of such [joint-stock] companies, however, being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."*[39]

Trying to maximize their personal utility[40] in terms of greater power, prestige and private wealth[41], managers are tempted to extract private benefits at the cost of shareholders. These benefits may come in different forms. Managers may, for instance, directly divert funds into their own pockets[42], improve their

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[37] See Berle/Means (1932), p. 333; Grossman/Hart (1982), p. 107; Easterbrook (1984), p. 652; Demsetz/Lehn (1985), p. 1173; Stiglitz (1985), p. 134; Williamson (1985), p. 312; Hart/Moore (1995), p. 568.

[38] See Fischel (1982), pp. 1262f; Fama/Jensen (1983a), p. 304.

[39] See Smith (1776), p. 229.

[40] A fundamental premise underlying agency theory is the one of opportunistic and utility-maximizing individuals. For academic reference see Jensen/Meckling (1976), p. 308; Williamson (1985), p. 6; Jensen (1994), p. 41; Learmount (2002), p. 4; Clarke (2004), p. 5.

[41] See Berle/Means (1932), pp. 122ff; Gordon (1945), pp. 305ff; Williamson (1963), p. 1034; Eisenberg (1976), p. 31.

[42] See Berle/Means (1932), p. 333; Shleifer/Vishny (1997), p. 742.

terms of employment[43], pretend to be qualified in order to get or keep a job, or pursue non-value maximizing investment strategies.[44]

Closely related to the notion of conflicting interests is the one of asymmetric information, indicating that one party is better informed than the other. Information asymmetries are only relevant if the contracting parties have diverging interests. Otherwise, all information would be automatically revealed, since neither party would benefit from hiding any information.[45] In real life situations, information is not freely available to all parties. Especially shareholders are at a disadvantage because managers sometimes dispose of information that they are reluctant to share for opportunistic reasons and that cannot be observed or verified by external observers.[46] The following chapter provides a more profound insight into the concept of asymmetric information.

[43] See Williamson (1985), p. 312.

[44] Morck et al. (1988a), p. 293. A more comprehensive overview on different forms of agency problems will be presented in chapter 2.1.5.

[45] See Macho-Stadler/Pérez-Castrillo (2001), p. 6.

[46] See Leland/Pyle (1977), p. 371; Pratt/Zeckhauser (1985), pp. 2f.

2.1.4 Concept of Asymmetric Information

2.1.4.1 Types of Asymmetric Information Problems

In the context of the principal-agent relationship, three types of information problems need to be differentiated: adverse selection, moral hazard and hold up.[47]

The information problem of hidden characteristics or adverse selection refers to a situation in which the principal does not know certain characteristics of the agent ex-ante, meaning prior to the closing of a contract.[48] It is argued that the agent, at the time he is being hired, may intentionally hide his or her negative qualities and pretend to have skills or abilities that are in fact non-existent.[49] However, the principal does not recognize these characteristics until the contract has been concluded. In a situation where bad agents hide their negative or below-average characteristics and good agents are not able to disclose their positive or above-average characteristics, the latter group may withdraw from the market.[50] Eventually, this leads to a selection of undesirable agents which is commonly referred to as the adverse selection problem, originally proposed by Akerlof (1970).[51]

A second information problem is the one of hidden action and information which is also known as moral hazard.[52] In contrast to adverse selection, moral hazard is concerned with information asymmetries that occur ex-post, that is, after a contract has been signed. Here, the principal is either not able to ob-

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47 See Picot et al. (2005), p. 74.

48 See Macho-Stadler/Pérez-Castrillo (2001), p. 11; Picot et al. (2005), p. 74; Rudolph (2006), p. 142.

49 See Eisenhardt (1989), p. 61.

50 See Picot et al. (2005), p. 74.

51 In his “market for lemons” model, analyzing a market for used cars, Akerlof (1970) describes how information asymmetries and market mechanisms may lead to a successive retention of above-average agents, ultimately resulting in a collapse of the market. Other relevant contributions with respect to the adverse selection problem have been provided by Rothschild/Stiglitz (1976), Myers/Majluf (1984), among others.

52 Previous literature dealing with the moral hazard problem include e.g. Zeckhauser (1970), Arrow (1971), Ross (1973), Mirrlees (1974), Harris/Raviv (1978) and Holmström (1979).

serve[53] or to assess the decisions and actions of the agent.[54] It is argued that the agent may not abide by the agreed-upon effort[55] and may intentionally exploit the information deficit of the principal[56]. Due to a cost and time restraint the principal is basically not able to continuously verify the action of the agent. In addition, he might not even be capable to assess whether the decision or action taken by the agent is actually appropriate and whether the output was predominantly affected by the efforts of the agent or some arbitrary exogenous factors.[57]

The last of the three information problems is hidden intention, which has also come to be known as hold-up. The hold-up problem, which was introduced by Williamson (1975), Goldberg (1976) and Klein et al. (1978) has become widely accepted among economists as an essential determinant of contractual and organizational structure.[58] Compared to the two other information problems, hold-up is not predominantly concerned with information asymmetries between principal and agent but rather with information asymmetries between the contractors and third parties, particularly courts. It is primarily based on the notion that complete and unanimously verifiable contracts cannot be specified or legally enforced.[59] Due to a variety of uncertain future contingencies, that cannot be specified ex-ante, contracts will always be incomplete to a certain extent, providing one contracting party (agent) with a certain freedom on how to render its services.[60] In a hold-up situation the agent opportunistically exploits such

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[53] See Holmström (1979), p. 74; Macho-Stadler/Pérez-Castrillo (2001), p. 9; Stiglitz (2000), p. 1453; Rudolph (2006), p. 142.

[54] See Picot et al. (2005), p. 75.

[55] See Arrow (1985), pp. 38f; Eisenhardt (1989), p. 61.

[56] See Picot et al. (2005), p. 75; Rudolph (2006), p. 142.

[57] See Scharfstein (1988), p. 186; Richter/Furubotn (2003), p. 174; Picot et al. (2005), p. 75. Agency theory assumes that the output generated by the firm not only depends on the capabilities and efforts of the managers but on various exogenous factors. See also Arrow (1985), p. 37.

[58] See Rogerson (1992), p. 777.

[59] See Picot et al. (2005), p. 75.

[60] See Spremann (1990), p. 569; Picot et al. (2005), p. 75.

contractual gaps at the expense of the principal who is de facto powerless from a legal perspective.[61]

2.1.4.2 Measures Reducing Information Asymmetries

Depending on the type of information problem the principal can generally revert to different conceptual measures that help to reduce information asymmetries, of the sort outlined in the preceding chapter (see table 1).

Table 1: Overview of Measures Reducing Information Asymmetries

	Adverse Selection	Moral Hazard	Hold-Up
Information Problem of the Principal	Qualities (skills and abilities) of the agent are unknown	Efforts of the agent cannot be observed or judged	Contracts are incomplete and cannot be verified
Origin of the Problem	Hidden characteristics	Hidden action and information	Hidden intention
Timing of the Problem	Prior to conclusion of contract	After conclusion of contract	After conclusion of contract
Counteractive Measures	Screening, signaling, self-selection, alignment of interests	Monitoring, alignment of interests	Alignment of interests

Source: Own illustration following Picot et al. (2005), p. 77.

Basically, in all three cases (adverse selection, moral hazard and hold-up) incentive alignment or bonding systems, where the interests of the agents are aligned with those of the principals, can help to effectively reduce information asymmetries and to prevent opportunistic behavior of the agent. These may include performance-based remuneration structures or specific contractual obligations urging agents to abide by specific rules.[62]

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[61] See Goldberg (1976), p. 439; Spremann (1990), p. 568.

[62] See Jensen/Meckling (1976), p. 325; Eisenhardt (1989), p. 61; Spremann (1990), pp. 581ff; Achleitner (2001), p. 52.

In addition to bonding mechanisms, adverse selection can be counteracted by reducing information asymmetries with the means of screening, signaling and self-selection prior to signing the contract. Screening here refers to the collection of relevant information on the agent[63], which permits principals to receive a more detailed and reliable picture on his qualities and efforts. In contrast, signaling is based on the idea that above-average agents are interested in trustworthy communicating their qualities and motivation by sending binding signals to the principals, e.g. by providing certificates and diplomas or by creating reputation.[64] Thus, the agent provides an indication that he will be the eligible candidate for the job and that he will behave in accordance with the principal's interests after the contract has been concluded. Self-selection eventually refers to the process by which the agent reveals information about himself through the choices that he makes.[65] Here, the agent may choose among differently designed contracts. According to the agent's choice the principal is able to assess the qualities of the agent.[66]

A significant measure to encounter the moral hazard problem is monitoring.[67] Monitoring an agent is costly and limited to a certain extent, as these costs rise exponentially with increasing monitoring efforts.[68] However, monitoring mechanisms, such as budgeting or reporting systems and the board of directors as primary internal supervisory body[69], can reduce information asymmetries and increase the vigilance with respect to managerial fraud and mismanagement.

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[63] See Picot et al. (2005), p. 78; Rudolph (2006), p. 142.

[64] See Achleitner (2001), p. 50; Picot et al. (2005), p. 78; Rudolph (2006), p. 142.

[65] See Stiglitz (2000), p. 1450.

[66] See Picot et al. (2005), p. 78.

[67] See Holmström (1979), p. 74; Achleitner (2001), p. 52; Rudolph (2006), p. 142.

[68] See Holmström (1979), p. 74.

[69] See Eisenhardt (1989), p. 61.

2.1.5 Agency Problems

In the past, corporate head offices have often been a prominent arena for unrestrained and morally questionable leadership, motivated by managerial discretion. Top-level executives can hire and fire employees as they desire, allocate capital where they wish and reorganize the company as they please[70], frequently colliding with the interests of shareholders. On balance, there are many possible manifestations of the agency conflict between managers and shareholders. Some of the most relevant and well documented categories of agency problems in the positive agency literature include:

- outright stealing,
- perquisites,
- empire building,
- entrenching investments,
- shirking,
- reputation and career concerns,
- overconfidence.[71]

A straight-forward agency problem is outright stealing of corporate resources.[72] In a more general sense, this may comprise excessive compensation packages[73] approved by managers themselves or by some related or dependent members of the board of directors. Furthermore, managers may sell outputs to a company they personally own at below market prices.[74] In a more specific

[70] See Berle/Means (1932), p. 124; Morck (2004), p. 6.

[71] For a good review of agency problems see Stein (2003).

[72] See Durnev/Kim (2005), p. 1463.

[73] See Peasnell et al. (2003), p. 235.

[74] See La Porta et al. (2000), p. 4.

sense, managers may directly withdraw corporate funds to increase personal wealth.[75]

In addition to outright theft, perquisite consumption represents a second category of agency problems. Apart from the agreed upon compensation, including fixed and variable components, managers may take advantage of additional non-pecuniary conveniences. These may include tickets to cultural or sporting events, lavish office accommodations, corporate meetings scheduled at luxury resorts, the use of corporate jets for personal purposes or borrowing from the firm below the market interest rate.[76]

Another type of agency problem is “empire building”. The term refers to the tendency of managers to enlarge their companies beyond the optimal size disregarding whether such growth goes along with an increase in shareholder wealth.[77] Hereby, the motivation of managers is basically twofold. In the first place, corporate growth is usually associated with an increase in compensation and monetary rewards, augmenting personal wealth of the respective executives.[78] Perhaps even more important, managers are motivated by non-monetary rewards. They are for instance interested in increasing personal power and prestige by multiplying the resources under their command and by reigning over influential empires.[79]

A fourth category of agency problems is entrenching investments. Here, managers invest in projects that are designed to require or reward their qualities and experiences.[80] Such management-specific investments are often constructed in a way that makes it very costly for shareholders to replace top executives of the company.[81]

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[75] See Shleifer/Vishny (1997), p. 742; La Porta et al. (2000), p. 4.

[76] See Brealey/Myers (2000), p. 321; Peasnell et al. (2003), p. 235.

[77] See Jensen/Murphy (1990), p. 149; Stulz (1990), p. 4; Bhojraj/Sengupta (2003), p. 455; Stein (2003), p. 121; Hartzell et al. (2004), p. 2.

[78] See Baumol (1959), p. 42; Murphy (1985), p. 32; Jensen (1986), p. 323; Stulz (1990), p. 4.

[79] See Gordon (1945), pp. 305ff; Eisenberg (1976), p. 31.

[80] See Shleifer/Vishny (1989), p. 123; Brealey/Myers (2000), p. 321; Tirole (2001), p. 1.

[81] See Shleifer/Vishny (1989), p. 123.

Another form of agency problems can be subsumed under “shirking” or “reduced effort”. Identifying and implementing profitable and valuable investment opportunities in a very competitive environment requires a great deal of effort and a high level of stress resistance. Since managers are not the residual claimants receiving the major share of the wealth effects of their decisions, it is often argued that they have less incentive to exert as much effort as if it was their money that was at risk.[82] As stressed by Baumol (1959) and Bertrand/Mullainathan (2003), managers prefer the “quiet life” when it comes to making tough and uncomfortable decisions. In this context, they are reluctant to undertake risks and avoid outstanding accomplishments which may possibly raise expectations on future performance.[83]

Another source of conflict may arise from reputation and career concerns on the part of managers.[84] Though such concerns may to some extent lead to better agents[85], they may also hinder managers to make value-enhancing decisions as preferred by shareholders. In this respect, three problems can be distinguished: short-termism, herding and conservatism. With regard to the first problem, Narayanan (1985) argues that managers may be particularly interested in boosting short-term performance measures at the cost of the long-term value of the company. His view has been supported by empirical findings of Dechow/Sloan (1991) and others. Herding is another phenomenon that can be observed in connection with career concerns. Here, managers tend to follow the decisions of other managers while ignoring their own intuition and know-how.[86] This may be explained by managerial risk aversion which leads us to the final problem regarding career concerns, conservatism. Holmström/Costa (1986) point out that reputation and career concerns may be related to a reluctance of managers to engage in new investment projects. It is argued that the outcome of the new project will provide information about managerial ability, which man-

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[82] See Jensen/Meckling (1976), p. 313; Harris/Raviv (1978), p. 21; Harris/Raviv (1979), p. 232; Brealey/Myers (2000), p. 321; Stein (2003), p. 120.

[83] See Baumol (1959), p. 92.

[84] See Stein (2003), p. 122.

[85] See Fama (1980), p. 292.

[86] See Scharfstein/Stein (1990), p. 465; Zwiebel (1995), p. 2; Stein (2003), p. 123.

agers may want to hide. Particularly risk averse managers may want to avoid any variation in wages determined by labor markets in response to their performance.[87] Apart from avoiding new investment projects, managers may also choose to invest in less risky projects[88], decide to diversify the company's operations as this reduces the risk of the company to go out of business[89], or avoid liquidating poorly-performing subsidiaries in fear of admitting to have failed.[90]

The final type of agency problems is overconfidence. As suggested by Roll (1986) managers may be overly optimistic about particular investment projects. They may, for instance, pay too much for a target in corporate takeovers simply due to excessive pride.[91]

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87 See Stein (2003), p. 124.

88 See Hirshleifer/Thakor (1992), pp. 438f.

89 See Peasnell et al. (2003), p. 235. See for instance Berger/Ofek (1995) for empirical evidence on the negative effect of diversification on firm value. As Grossman/Hart (1982) indicate, bankruptcy reduces managers' benefits associated with their position.

90 See Boot (1992), p. 1402; Baker (2000), p. 1.

91 See Roll (1986), p. 197; Malmendier/Tate (2004), p. 1.

2.1.6 Agency Costs

Agency conflicts between managers and shareholders, as described in chapter 2.1.5, incur non-negligible costs on the part of shareholders which are also referred to as agency costs. According to Jensen/Meckling (1976), agency costs include monitoring and bonding costs as well as a "residual loss".[92]

Monitoring costs can be considered as the price of all efforts of the principal to reduce his informational disadvantage by observing or controlling the agent.[93] Typical monitoring measures include auditing and budgeting systems and the board of directors.[94] By contrast, bonding costs refer to the price of all measures used to align the interests of the agent with those of shareholders.[95] These may include effective incentive structures, such as equity-based compensation systems, that enable managers to participate in the wealth effects of their decisions.[96] However, in spite of total monitoring and bonding efforts it is not possible for shareholders to prevent all value-decreasing behavior of the agent. The actual loss resulting from such value-reducing decisions is called "residual loss of welfare"[97] and represents the last component of agency costs.

In the end, agency costs can be substantial, reducing a company's productivity[98] and eventually shareholder value. Therefore, shareholders are highly interested in minimizing agency costs. In view of this line of argumentation, it is obviously important to establish checks and balances on managerial behavior. A system dealing with such checks and balances with the objective to mitigate agency problems and to reduce related agency costs is corporate governance which will be further dealt with in the following chapters.

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92 See Jensen/Meckling (1976), p. 308.

93 See Picot et al. (2005), p. 73.

94 See Jensen/Meckling (1976), p. 323.

95 See Jensen/Meckling (1976), p. 308.

96 See Shleifer/Vishny (1997), p. 744.

97 See Jensen/Meckling (1976), p. 308.

98 See Börsch-Supan (1998), p. 206; Börsch-Supan/Köke (2002), p. 295.

2.2 Concept of Corporate Governance

2.2.1 Definitions of Corporate Governance

The term “corporate governance”, originating from the Anglo-Saxon usage, has not been introduced to academic literature in its actual meaning until the mid 1980s.[99] Even though, a clear and unanimously accepted definition does not yet exist, numerous varying definitions of the term can be found in the literature.

Cadbury (1992), for instance, generally defines corporate governance as a “*system by which companies are directed and controlled*”[100]. In turn, according to Baums (2001) corporate governance is primarily concerned with “*the functionality of management bodies, their cooperation and the control of their conduct*”[101]. However, these definition attempts have a rather broader scope and do not capture the complexity of the term.

Clearly, there are more specific definitions of corporate governance. But, prior to going into further detail it is necessary to distinguish between two fundamentally deviating perceptions of corporate governance, one with the emphasis on the interests of all stakeholders of a company (stakeholder model of corporate governance) and one focusing only on the interests of shareholders (shareholder value model of corporate governance).[102]

Stakeholder-oriented definitions include the ones of Schmidt/Tyrell (1997), John/Senbet (1998) and Witt (2001). They respectively define corporate governance as follows:

> *“Corporate governance … is a complex concept …. [It] refers to the totality of the institutional and organizational mechanisms, and the corresponding decision-making, intervention and control rights, which serve to resolve con-*

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[99] The precise term can basically be traced back to Eells (1960), p. 108, to denote “the structure and functioning of the corporate polity”. However, it seems that Williamson (1984, 1985) was the first to use the term in the transaction cost context.

[100] See Cadbury (1992), p. 15.

[101] See Baums (2001), p. 20.

[102] For an overview of the different corporate governance models see Goergen (2007).

flicts of interest between the various groups which have a stake in the firm."[103]

"Corporate governance deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected."[104]

"The term corporate governance refers to the organization of management and control within a company with the aim of reconciliation of interests between the different interest groups (shareholders, managers, employees, bondholders, suppliers, clients, …)."[105]

However, shareholder-oriented definitions tend to dominate in corporate governance literature. This may be explained by the long Anglo-Saxon corporate governance research tradition which favors the maximization of shareholder value as the primary corporate goal.[106] A representative selection of frequently quoted definitions, including those of Shleifer/Vishny (1997), Gillan/Starks (1998) and La Porta et al. (2000), is provided below:

"Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment."[107]

"Corporate governance is a … system of laws, rules, and factors that control operations at a company."[108]

[103] Schmidt/Tyrell (1997), p. 342.

[104] John/Senbet (1998), p. 372.

[105] Witt (2001), p. 85.

[106] See Dufey et al. (1998), p. 47.

[107] Shleifer/Vishny (1997), p. 737.

[108] Gillan/Starks (1998), p. 4.

"Corporate governance is, to a large extent, a set of mechanisms through which outside investors protect themselves against expropriation by the insiders."[109]

By virtue of the object of investigation of this thesis, the understanding of corporate governance is derived from the shareholder model of corporate governance. Accordingly, corporate governance is specifically defined as a complex system of interdependent, internal and external mechanisms by which corporate management is controlled with the intention to protect the invested capital of shareholders against a potential misuse or expropriation.

The subsequent chapters will examine the overall structure of a corporate governance system and present the most relevant control mechanisms on an individual basis.

[109] La Porta et al. (2000), p. 4.

2.2.2 Structure of a Corporate Governance System

A system of corporate governance is composed of a variety of mechanisms, in other words devices, rules and market forces, that work together to reduce conflicts of interest between managers and shareholders as well as agency costs arising from such conflicts.[110] A decisive aspect with respect to the understanding of corporate governance systems is the interdependence among the different mechanisms. These do not only complement but also substitute each other in their quest for better governed companies.[111] Thus, where one mechanism is used more others may be used less providing the same disciplining effect.[112]

Based on contemporary corporate governance literature eight major categories of control mechanisms can be identified:

- board structure (Baysinger et al. (1985), Brickley et al. (1988), Weissbach (1988), Rosenstein/Wyatt (1990), Hermalin/Weisbach (1991), Lipton/Lorsch (1992), Byrd/Hickman (1992), Jensen (1993), Yermack (1996), Millstein/MacAvoy (1998)),
- incentive structure (Jensen/Warner (1988), Morck et al. (1988a), McConnell/Servaes (1990), Jensen/Murphy (1990), Chung/Pruitt (1996), Loderer/Martin (1997), Himmelberg et al. (1999), Demsetz/Villalonga (2001), Peasnell et al. (2003)),
- capital structure (Stiglitz (1985), Jensen (1986), Hart/Moore (1995), Zwiebel (1996)),
- ownership concentration (Zeitlin (1974), Demsetz/Lehn (1985), Shleifer/Vishny (1986), Holderness/Sheehan (1988), Zeckhauser/Pound (1990), Admati et al. (1994), Smith (1996), Maug (1998), Demsetz/Villalonga (2001)),

[110] See Stapledon (1996), pp. 10f.

[111] See Agrawal/Knoeber (1996), pp. 378f; John/Senbet (1998), p. 391; Peasnell et al. (2003), p. 232; Beiner et al. (2004), p. 334.

[112] Williamson (1985), p. 306, already argues that the incremental impact of a governance mechanism on reducing agency problems depends on the set of mechanisms employed by the company.

- transparency of disclosure (Williamson (1985), Eisenberg (1976), Stapledon (1996), Jensen/Murphy (1990), Bushman/Smith (2001), Khanna et al. (2004), Durnev/Kim (2005)),
- laws and regulation (La Porta et al. (1997), La Porta et al. (1998), Lombardo/Pagano (2002), La Porta et al. (2002), Shleifer/Wolfenzon (2002), Klapper/Love (2004), Durnev/Kim (2005)),
- market for corporate control (Manne (1965), Jensen/Ruback (1983), Jensen (1988)),
- market competition (Baily/Gersbach (1995), Nickell et al. (1997), Beiner (2005)).[113]

These can be classified as internal[114] or external mechanisms of corporate governance (see table 2).[115]

Table 2: Overview of General Categories of Corporate Governance Mechanisms

Internal Corporate Governance Mechanisms	External Corporate Governance Mechanisms
▪ Board structure (e.g. board size, board independence) ▪ Incentive structure (e.g. equity-based remuneration, managerial ownership) ▪ Capital structure (e.g. leverage) ▪ Ownership concentration (e.g. block ownership, institutional ownership) ▪ Transparency of disclosure	▪ Laws and regulation ▪ Market for corporate control (e.g. hostile takeovers) ▪ Market competition (e.g. product market, labor market)

Source: Own illustration.

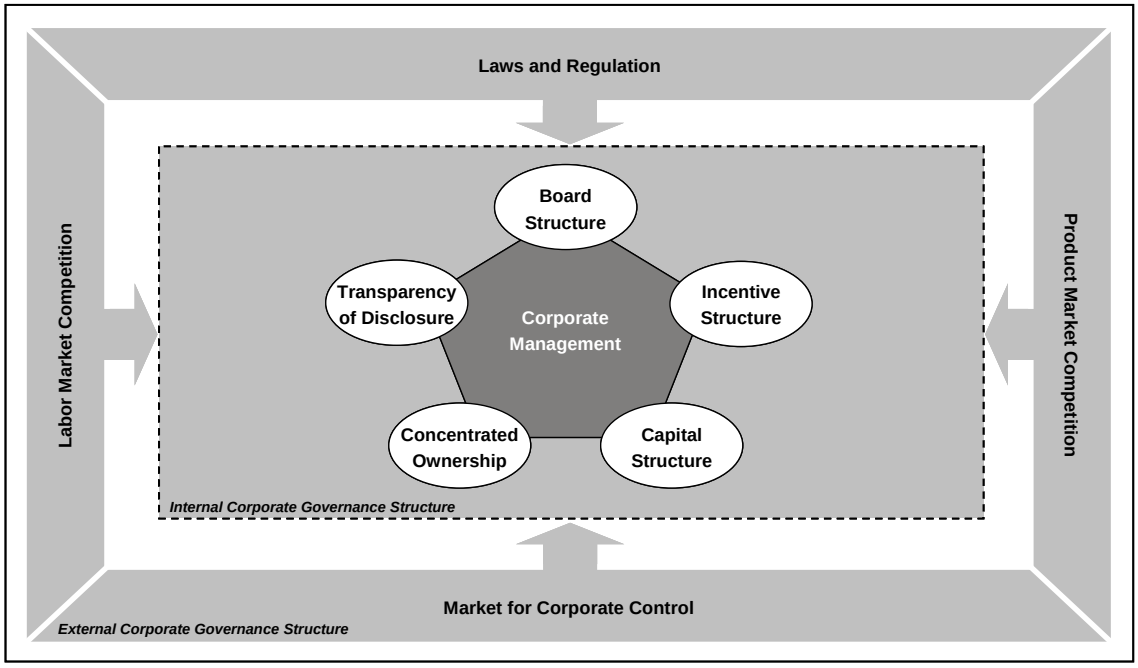
[113] For a similar but sometimes less comprehensive classification see Baysinger/Butler (1985), p. 103; Jensen (1993), p. 850; Hart (1995), p. 681; Agrawal/Knoeber (1996), pp. 377f; Dufey et al. (1998), pp. 49ff; Himmelberg et al. (1999), pp. 381f; Becht et al. (2002), pp. 21f; Bushman/Smith (2001), p. 238; Börsch-Supan/Köke (2002), p. 313; Gillan et al. (2003), p. 1; Schillhofer (2003), p. 26; Beiner (2005), p. 22; Larcker et al. (2007), p. 966.

[114] "Internal" here refers to as being influenced or affected by the company or its shareholders; see also Toksal (2004), p. 45.

[115] See also Walsh/Seward (1990), p. 421, 423ff; Agrawal/Knoeber (1996), pp. 378f; Dufey et al. (1998), pp. 49ff; Bushman/Smith (2001), p. 238; Gillan et al. (2003), p. 1; Clarke (2004), p. 7.

Board structure, incentive structure, capital structure, ownership concentration and transparency of firm-specific disclosure are often regarded as a company's internal corporate governance structure which refers to the sum of all management-disciplining provisions that can be influenced by the company itself or its shareholders. In contrast, a company's external corporate governance structure comprises all disciplining mechanisms induced by external institutions, such as the market or the state. They include laws and regulation, the market for corporate control and market competition (see figure 5).

Figure 5: General Illustration of a Corporate Governance System



Source: Own illustration.

Each of the above mentioned corporate governance mechanisms will be discussed in the following chapters.

2.2.3 Internal Corporate Governance Mechanisms

2.2.3.1 Board Structure

As a company's primary internal supervisory body, the board of directors is widely perceived to play a pivotal role in corporate governance.[116] It is a legally constituted entity within the corporate setting whose members have the fiduciary duty and the responsibility to ensure that the company is managed in the interests of shareholders.[117] The directors are legally enforced to act collectively on behalf of shareholders who are not able to adequately exercise control themselves due to a wide dispersion of ownership.[118]

Worldwide, there are basically two main forms of board structures that are often associated with different models of corporate governance: the one-tier structure and the two-tier structure. In countries with one-tier board systems, such as the US or the UK, companies are governed by a single board where the functions of management and management control are combined in a single body. Hence, one-tier boards consist of executive and non-executive directors. On the contrary, in countries with two-tier board systems, such as Germany and the Netherlands, companies are governed by a management board and a supervisory board, two separate bodies differentiating between management and control function.[119]

Regardless of the respective board system, the board of directors[120] generally has to perform three main functions: selecting and hiring top managers, monitoring their decisions and actions, and replacing incumbent management if

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[116] See Baysinger/Butler (1985), p. 109; Williamson (1985), p. 306; Weisbach (1988), p. 431; Gillan/Starks (1998), p. 13; John/Senbet (1998), p. 379; Shivdasani/Yermack (1999), p. 1829; Beiner et al. (2004), p. 327.

[117] See Morck et al. (1988a), p. 307; Friday/Sirmans (1998), p. 411; Peasnell et al. (2003), p. 234; Bhojraj/Sengupta (2003), p. 456.

[118] See John/Senbet (1998), p. 373.

[119] For a more detailed delineation of the different characteristics regarding the two board systems see Jungmann (2006).

[120] In the subsequent course of this thesis "board of directors" refers to the board of directors in one-tier systems as well as the supervisory board in two-tier systems.

it performs poorly.[121] In practice, boards of directors do not always exercise the active control over management with which it is credited in theory.[122] Mace (1971), for instance, documents that directors may remain loyal to misguided management. Similarly, Morck (2004) contends that directors seem to be paralyzed in the presence of dominant and powerful CEOs.

In order to serve as effective governance devices it is commonly agreed that boards of directors have to meet certain criteria with respect to composition and size.[123] With regard to the first, directors must be independent of the managers they monitor[124], so that they are less inclined to ignore or tolerate mismanagement or self-serving behavior.[125] If directors are part of the executive team or in any other way closely related to management they are likely to have interests that diverge from those of shareholders.[126] As argued by Jensen (1993) and Conyon/Peck (1998), executive directors tend to have less incentive to admonish or remove the CEO since their careers are dependent on the CEO's courtesy. Furthermore, some researchers, including Fama (1980), Fama/Jensen (1983a) and Weisbach (1988), argue that independent non-executive directors monitor managers more carefully since they are concerned about their reputations in the directorial labor market. Those directors who fail to adequately monitor and discipline incumbent management bear reputation costs reducing the probability of a potential future employment as an independ-

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[121] These responsibilities are by no means exhaustive. In addition, directors are responsible for setting and overseeing the company's policies for compensating management, providing advice to top management, ratifying material corporate decisions and handling crisis situations. For a more comprehensive review on the role of the board of directors see Bates (1940), Mace (1971), Eisenberg (1976) and Klein (1998), among others.

[122] See Gordon (1945), p. 94; Jensen (1993), p. 862; Millstein/MacAvoy (1998), p. 1292.

[123] See John/Senbet (1998), p. 379; Beiner et al. (2004), p. 327; Feng et al. (2005), p. 285.

[124] See Winter (1977), p. 285; Fama (1980), p. 293f; Baysinger/Butler (1985), p. 108; Weisbach (1988), p. 431; Millstein (1993), pp. 1490f; Brickley et al. (1994), pp. 371f; Lapides/Torres (1997), p. 232; Hermalin/Weisbach (1998), p. 97; Millstein/MacAvoy (1998), p. 1292; Beiner (2004), p. 327; John/Senbet (1998), p. 373; Ghosh/Sirmans (2003), p. 287; Adams/Ferreira (2005), p. 2; Feng et al. (2005), p. 282; Black et al. (2006), p. 407; Ghosh/Sirmans (2006), p. 337.

[125] At the same time some economists, e.g. Fama/Jensen (1983a) and Baysinger/Butler (1985), argue that the board of directors should include some executives or insiders as they provide internal knowledge and therefore valuable information to outsiders facilitating the monitoring and decision making function of the board.

[126] See Fama/Jensen (1983a), pp. 313-315.

ent director on another company's board.[127] In view of the argumentation sketched out above, it is reasonable to assume that independent members of the board typically exert more effective control than other directors.

The second characteristic of the board that makes it more effective is its size. Lipton/Lorsch (1992), Jensen (1993) and Yermack (1996) claim that the ability to control management decreases as boards become larger. They argue that larger boards tend to operate less effectively due to increasing coordination and communication problems. With a greater number of directors on the board it is certainly more difficult for them to communicate their ideas and to make adequate decisions in the limited time available.[128] Therefore, it can be presumed that small boards typically provide better disciplining and monitoring than large boards.

Eventually, smaller and more independent boards of directors should contribute to a more rigid governance of companies.

2.2.3.2 Incentive Structure

Incentive systems are considered to serve as another important control mechanism in a company's corporate governance structure. According to Jensen/Murphy (1990), a well crafted incentive structure does not only have an effect on how executives behave but also on what type of executives it attracts. A greater emphasis on performance-based remuneration necessarily attracts more highly motivated and competent managers since they are better off than in companies without such incentives.[129]

The most common way to incentivize managers is to introduce a variable compensation package that may consist of monetary rewards relating to certain accounting-based performance measures, e.g. return on assets (ROA), return on equity (ROE), return on investment (ROI) and price earnings ratio (P/E), or stock-based bonuses that can include corporate shares or stock options.[130]

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[127] See Conyon/Peck (1998), p. 295.

[128] See Lipton/Lorsch (1992), p. 65.

[129] See Fama (1980), p. 292; Jensen/Murphy (1990), p. 139.

[130] See Grossman/Hart (1982), p. 107; Ghosh/Sirmans (2006), p. 330.

Accounting-based performance measures are rather inappropriate to determine the success of a company and hence the ability and commitment of its managers for two major reasons. First, book values are easy to manipulate and can be sugarcoated. For example, managers are able to inflate accounting measures by understating expenses, by overstating revenues or by off balance sheet financing.[131] Second, a performance-oriented remuneration relating to historical accounting figures that merely provide information on the past performance disregarding the development of future performance may cause managers to behave myopic. In this context, managers may be interested in boosting short-term earnings at the cost of sustainable long-term shareholder value appreciation.[132]

Therefore, it is generally more effective to establish equity-based remuneration systems. Many academics and researchers hold the opinion that the best and easiest way to ensure that managers will act in the very interests of shareholders is to give them an equity stake in the company.[133] In a formal setting, Jensen/Meckling (1976) argue that higher levels of managerial ownership help to align the interests of managers with the ones of shareholders whereas managers' propensity to take value-decreasing decisions declines (convergence-of-interest hypothesis).[134] Having a substantial fraction of their personal wealth tied to the success of the company, managers bear the financial costs resulting from mismanagement or value-diminishing decisions.[135] Consequently, holding

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[131] See Ghosh/Sirmans (2006), p. 330.

[132] See for instance Narayanan (1985), p. 1469; Dechow/Sloan (1991), pp. 87f; Ghosh/Sirmans (2006), p. 334.

[133] See Gordon (1945), p. 293; Jensen/Murphy (1990), p. 139; Chung/Pruitt (1996), p. 1137; Stapledon (1996), p. 12; Loderer/Martin (1997), p. 224; Himmelberg et al. (1999), p. 354; Ghosh/Sirmans (2003), p. 292; Beiner (2005), p. 27; Han (2006), p. 472.

[134] Leland/Pyle (1977) present a slightly different reasoning for increased managerial ownership. They suggest that a higher managerial stake conveys a positive signal to the market indicating the quality the company's investment decisions. Other researchers, including Stulz (1988), Bebchuck/Jolls (1999) and Peasnell et al. (2003), assert that high levels of managerial ownership may also have a detrimental effect on firm value since managers may take value-decreasing decisions at the expense of other shareholders without fear of being replaced (entrenchment hypothesis). For instance, owning large stakes in the company make it easier for managers to resist mergers even though these would imply an increase in corporate value.

[135] See Chung/Pruitt (1996), p. 1137; Friday et al. (1999), p. 72.

a greater stake in the company, managers are inclined to more efficiently allocate the assets under their control and to increase shareholder value.[136]

In summary, it can be assumed that greater managerial stock ownership tends to have a disciplining effect on corporate management and hence represents a relevant corporate governance mechanism that has to be taken into consideration.

2.2.3.3 Capital Structure

One strand of corporate governance literature claims that the financing policy or the capital structure of a company is a relevant factor in reducing agency costs. As stressed by Jensen (1986), Stulz (1990) and Hart/Moore (1995), among others, leverage helps to discourage the diversion of free cash flows by corporate management (free-cash-flow hypothesis).[137] The basic intuition behind this hypothesis is that increased debt levels force management to pay out a higher fraction of their free cash flows to meet debt service obligations. Hence, this leaves managers with fewer funds they might potentially invest in non-profitable, value-decreasing projects.[138]

In addition, Grossman/Hart (1982) and Jensen (1986) delineate that the threat in connection with a possible failure to meet debt service payments in the future further encourages managers to apply more effort and to make their companies more efficient. The threat of potential bankruptcy is particularly severe in the presence of exceptionally high debt ratios. In such situations, debt holders tend to be even more vigilant and closely verify the decisions and actions taken by management. But also in less severe situations debt holders perform a general monitoring function that serves to discipline managers[139] and makes sure that management does not jeopardize the provided capital. Depending on the performance of managers they are able to accept or reject fur-

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[136] See Jensen/Meckling (1976), p. 313; Chung/Pruitt (1996), pp. 1137, 1139; Ghosh/Sirmans (2006), p. 352.

[137] The free-cash-flow hypothesis was originally proposed by Jensen (1986).

[138] See Stulz (1990), p. 4; Hart/Moore (1995), p. 568; Friday (1997), p. 2.

[139] See Friday (1997), p. 2.

ther requests for debt capital in the future and thereby induce managers to run the company in an appropriate way.

Nonetheless, for reasons of completeness it has to be pointed out that there are also negative agency-related effects attributed to leverage. A widely known problem associated with high debt ratios is the one of underinvestment, introduced by Myers (1977). He indicates that if companies heavily rely on debt financing, managers are restricted in their ability to pursue value-creating projects because of large debt service requirements. In turn, Jensen/Meckling (1976) argue that managers of highly levered companies might also engage in promising but very risky projects with low probability of success.

Taking these undesirable effects of leverage on managerial behavior into account, the effectiveness of leverage as a governance mechanism is difficult to assess from a theoretical point of view.

2.2.3.4 Ownership Concentration

Concentrated ownership in blocks of securities held by large private or institutional shareholders, that are unaffiliated with corporate management, is widely regarded to provide a powerful check on managerial behavior.[140]

The rationale for this conviction is straight-forward. Roe (1990) emphasizes that agency conflicts do not only emerge from the separation of ownership and control but also from the diffuse and atomic nature of ownership characterizing public corporations. A small shareholder holding a miniscule stake in a company generally should have no incentive to engage in monitoring activities or to take corrective measures[141] for two fundamental reasons. First, the costs associated with such activities would simply be too high[142] compared to the benefits. Secondly, other shareholders would benefit without incurring any costs by “free-

[140] See Zeitlin (1974), pp. 1089ff; Stiglitz (1985), p. 144; Shleifer/Vishny (1986), p. 463; Admati et al. (1994), p. 1099; Gillan/Starks (1998), p. 15; Becht (1999), p. 1073; Anderson/Reeb (2003), p. 1311; Gillan/Starks (2003), pp. 5, 25; Clarke (2004), p. 8.

[141] See Gillan/Starks (2003), p. 4.

[142] See Fama/Jensen (1983a), p. 309; Shleifer/Vishny (1986), p. 462; McConnell/Servaes (1990), p. 598.

riding" on his efforts.[143] In comparison, a large shareholder with a significant stake in the company is very likely to be induced to monitor and control corporate management as the probability that the additional return resulting from monitoring and taking corrective action outweighs the costs.[144] In addition, they have the necessary voting power to enforce their concerns.[145] As an indication for the hypothesis of better monitoring by large shareholders, Kaplan/Minton (1994) and Kang/Shivdasani (1995), for instance, find empirical evidence that the presence of large shareholders incurs greater management turnover. In turn, Shleifer/Vishny (1986) and Shivdasani (1993) further suggest that large shareholders may facilitate value-enhancing takeover attempts by third parties.

An active role of monitoring can be particularly ascribed to institutional investors, such as insurance companies, mutual and pension funds.[146] Based on their mandate, they have a responsibility and obligation towards their clients to make sound decisions with respect to their current and future investments[147] and to take appropriate actions to ensure shareholder value creation and maximization[148]. By virtue of their size and the significant amount of financial assets under their control institutional shareholders are able to exert great pressure on corporate management either directly by exercising their voting power (shareholder activism)[149] or indirectly by selling a company's shares (Wall Street rule)[150,151]. In recent years, institutional investors have become increas-

[143] See for instance Admati et al. (1994), p. 1100; Gillan/Starks (1998), p. 15. The "free-rider" problem was proposed by Grossman/Hart (1980).

[144] See Gillan/Starks (1998), p. 14; Maug (1998), p. 67; Sirmans (1999), p. 22. According to Barclay/Holderness (1989) and Dyck/Zingales (2004) holding large blocks of securities is associated with additional value or private benefits. They find that block trades are on average priced at significant premiums to the quoted price.

[145] See Sirmans (1999), p. 22.

[146] See Stapledon (1996), pp. 207f; Bhojraj/Sengupta (2003), p. 456; Chan et al. (2003), pp. 89f; among others. Institutional investors are professional asset gatherers through which predominantly private individuals achieve diversification in their personal portfolios; see Admati et al. (1994), p. 1098.

[147] See Eisenberg (1976), p. 58.

[148] See Pozen (1994), p. 141.

[149] For a comprehensive discussion on the role of institutions in shareholder activism see Gillan/Starks (2003).

[150] See Admati/Pfleiderer (2005), p. 1.

ingly active[152], meaning that they actually participate in or at least decisively influence the strategic direction of companies[153] in order to make sure that value-increasing policies are being pursued. There is numerous empirical support for the effectiveness of institutional shareholders in monitoring and actively influencing corporate management. Jarrell/Poulsen (1987) and Brickley et al. (1988), for instance, find evidence that institutional shareholders are more likely to vote against takeover amendments that destroy shareholder value. In addition, Hartzell/Starks (2003) document a negative relation between institutional ownership and excessive managerial compensation. Moreover, Wahal (1996) reveal that the announcement of activist institutional sharholders' pressure leads to positive abnormal returns. Similarly, Smith (1996) finds that institutional shareholder activism significantly increases stock prices.

Overall, by means of monitoring and shareholder activism concentrated ownership appears to be an important component of a well-functioning corporate governance system.

2.2.3.5 Transparency of Disclosure

Transparency of disclosure refers to the disposal of all material facts and information relevant for the decision-making process of investors in a timely, structured and comprehensive manner.

Disclosures are made on the responsibility of management[154] and are coordinated by a company's investor relations department which is supposed to organize the communication process between management and capital market participants.[155] Disclosures include ad-hoc publication of important news as well as financial reports that are disseminated on a quarterly, semiannual and/or

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[151] See Gillan/Starks (2003), p. 1. Hirschman (1970) describes these alternatives as "voice" and "exit", respectively.

[152] See Admati et al. (1994), p. 1098; Lapides/Torres (1997), p. 230; Gillan/Starks (2003), p. 14.

[153] See for instance Jensen (1993), p. 867. Pozen (1994) indicates that institutional shareholder proposals encourage managers to make organizational changes that enhance shareholder value.

[154] See Berle/Means (1932), p. 317.

[155] See Schillhofer (2003), p. 35.

annual basis.[156] It is commonly argued that disclosure helps to reduce information asymmetries between managers and shareholders.[157] In this view, it may be interpreted as a mechanism that provides safeguards against managerial discretion[158] by constraining managers' possibilities to act as they please. High-quality disclosure allows shareholders to more adequately assess a company's current financial situation, to more successfully anticipate future developments[159] and to more accurately judge the performance of management[160].

In principle, one has to differentiate between mandatory and voluntary disclosure. Mandatory disclosure is determined by a country's legal framework, for national regulations require companies to disclose business and firm-specific information in accordance with certain accounting standards, such as the US Generally Accepted Accounting Principles (US-GAAP) and the International Financial Reporting Standards (IFRS), to harmonize the way in which managers communicate with investors.[161] These standards are merely minimum requirements and have a rather general character[162] but do not necessarily adapt to the unique nature of the individual businesses. Depending on the business sector companies might disclose additional, business sector-specific information that makes disclosure of the respective companies more transparent.[163]

According to voluntary disclosure literature, there are different motives for managers to be committed to more transparent reporting practices.[164] Barry/Brown (1985), Healy/Palepu (1993) and Lang/Lundholm (1993), for in-

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[156] Other forms of communication may include management forecasts as well as conference calls and presentations for analysts and principal investors; see Healy/Palepu (2001), p. 406.

[157] See Williamson (1984), p. 1205; Diamond/Verrecchia (1991), p. 1325; Bushman/Smith (2001), p. 239; Healy/Palepu (2001), p. 407.

[158] See Eisenberg (1976), p. 35; Williamson (1985), p. 306; Jensen/Murphy (1990), p. 144.

[159] See Williamson (1984), p. 1205; Williamson (1985), pp. 301f.

[160] See Holmström (1979), p. 89; Stapledon (1996), p. 12.

[161] External auditors are supposed to provide assurance that a company's financial statements are generated in compliance with local accounting standards.

[162] See Healy/Palepu (2001), p. 412.

[163] Moreover, additional information other than financial figures may be important to investors. In support of this intuition, Mandl et al. (2008) find empirical evidence that extra-financial information, such as the quality of a company's human capital conveys value-relevant information to the public.

[164] For a more comprehensive illustration of the different motives for voluntary disclosure see Healy/Palepu (2001), pp. 420ff.

stance, hypothesize, that managers who intend to issue debt or equity or engage in a capital market transaction using shares to acquire another company, have incentives to provide voluntary disclosure in order to reduce a company's external financing costs. Furthermore, Trueman (1986) suggests that managers may want to voluntarily disclose information to signal their competence to the market.[165]

For the reasons given above, transparency of disclosure can be considered as non-negligible mechanism of a company's corporate governance.[166]

[165] In contrast, Verrecchia (1983), Darrough/Stoughton (1990) and Gigler (1994), among others, conclude that managers may not be interested in disclosing voluntary information in fear to lose their competitive edge in the market.

[166] See also Bushman/Smith (2001).

2.2.4 External Corporate Governance Mechanisms

2.2.4.1 Laws and Regulation

The legal or regulatory environment of a company, implying both laws and their enforcement, can be regarded as another basic element of corporate governance.[167]

One major reason for the willingness of investors to finance companies in the first place is that their rights and powers are protected by law.[168] However, a differentiated view has to be applied to providers of equity capital and those of debt capital. Shareholders are generally more exposed to opportunistic behavior by managers than debt holders since their rights are less precisely specified in contracts[169] and contractual violations are more difficult to verify by courts or other regulatory institutions[170]. There is a wide range of legal rules that particularly help to protect shareholders against expropriation by managers or that permit shareholders to monitor managers more cheaply and effectively. These include e.g. voting right rules, disclosure rules, anti-fraud rules and insider-trading rules.[171]

The quality of legal protection can vary decisively across different countries and jurisdictions. Typically, as the extent and quality of protective rules as well as the efficiency of law enforcement increases, capital market participants tend to have a higher motivation to finance companies. Empirical support for this argument comes from La Porta et al. (1997) who provide strong evidence that the development of capital markets is affected by the respective legal environment. Thereafter, legal regimes with high levels of investor protection and great efficiency of legal enforcement are associated with larger and broader capital markets, indicating a greater willingness to provide companies with capital.

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[167] See La Porta et al. (1997), p. 1131; La Porta et al. (2000), p. 4; Daines (2001), p. 525f; Lombardo/Pagano (2002), p. 1; Bruno/Claessens (2006), p. 1.

[168] See Shleifer/Vishny (1997), p. 752; La Porta et al. (2000), p. 4.

[169] See Lombardo/Pagano (2002), p. 1; Schillhofer (2003), p. 39.

[170] See Shleifer/Vishny (1997), p. 752.

[171] See also Nowak (1997), p. 49; La Porta et al. (1998), pp. 1122f; La Porta et al. (2000), pp. 6f.

Consistent with the notion that better legal protection mitigates agency problems, Klapper/Love (2004) show that companies from countries with weak legal environments have on average lower corporate governance rankings. Furthermore, Daines (2001) and La Porta et al. (2002) find a significantly positive association between the quality of laws protecting shareholders and market valuation. Similarly, Lombardo/Pagano (2002) document that the respect for legal rules and judicial efficiency are significantly positive correlated with the risk-adjusted return on equity.

Even though playing a role in corporate governance, legal protection is limited to a certain extent by virtue of the design of legal systems and the difficulty to verify all types of opportunistic behavior of managers. Hence, it appears to merely constitute a basic component in a corporate governance system that needs to be complemented by other disciplining mechanisms.

2.2.4.2 Market for Corporate Control

There is a wide-spread belief among academics that capital markets perform a monitoring and disciplining function through what is generally referred to as the market for corporate control.[172] Traditionally, the market for corporate control is represented by financiers who try to get control over a company to replace incumbent management and to improve resource allocation.[173] Thereby, corporate resources are redistributed from poor or underperforming to good or outperforming management teams.[174]

One important premise in connection with the market for corporate control is that the efficiency of management is correctly reflected in current share prices. As the share price deteriorates following poor managerial performance a company is likely to become a hostile takeover target.[175] Other market participants

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[172] See Manne (1965), p. 112; Winter (1977), p. 289; Jensen/Ruback (1983), p. 6; Jensen (1988), p. 23; Holmström/Tirole (1993), pp. 678f; Stapledon (1996), p. 11.

[173] In contrast, Jensen/Ruback (1983), p. 6, regard the market for corporate control as “a market in which alternative managerial teams compete for the rights to manage corporate resources”.

[174] See Stapledon (1996), p. 11.

[175] See Manne (1965), p. 112; Scharfstein (1988), p. 186.

may sooner or later identify that the company is undervalued. Consequently, they will try to take over the company, typically by making a tender offer to minority shareholders, in order to replace management[176] and to capture the associated gain in value.

Consistent with this intuition, Morck et al. (1988b) find that predominantly poorly performing companies tend to be targeted for takeovers. In turn, Jensen/Ruback (1983) show that target firms experience significantly positive abnormal returns between 20% and 30% right after a takeover transaction has been executed. Furthermore, Martin/McConnell (1991) document a significantly positive turnover rate for top managers of poorly performing companies after a successful completion of tender offer takeovers. Thus, it can be presumed that hostile takeovers as well as the threat of such takeovers and the inherent threat of being fired motivate managers to run the company in the interests of shareholders.[177]

Nonetheless, some researchers cast doubts on the effectiveness of corporate takeovers as a governance mechanism. Shleifer/Vishny (1988, 1997), for instance, argue that takeovers are so expensive that they only address major agency problems. Moreover, Shleifer/Vishny (1988) highlight that takeovers can also be associated with increased agency costs when the acquiring party overpays in the acquisition process. In contrast, Stein (1988) suggests that takeover pressure can have undesirable effects to the extent that managers sacrifice long-term shareholder interests by boosting short-term earnings in order to keep up current stock prices and to prevent potential takeover attempts. A similar line of argumentation is provided by Easterbrook/Fischel (1981) and Morck

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[176] See Winter (1977), p. 289; Shleifer/Vishny (1988), p. 11; Shleifer/Vishny (1997), p. 756.

[177] See Manne (1965), p. 113; Grossman/Hart (1982), p. 107, Jensen/Ruback (1983), pp. 29f; Morck et al. (1988b), p. 103; Scharfstein (1988), p. 185; Holmström/Tirole (1993), p. 679; Stapledon (1996), p. 11; Ghosh/Sirmans (2003), p. 291; Cremers/Nair (2005), p. 2864. According to Stapledon (1996), p. 11, equity as well as debt issuances can be considered as a second disciplining mechanism in the context of the market for corporate control. If a company is inefficiently managed and performs poorly it will be difficult to raise capital on equity as well as on debt capital markets. Equity placements may only be possible at substantial discounts whereas debt capital will only be granted at higher interest rates, ultimately raising a company's cost of capital. This, however, has a significantly negative impact on the firm's competitive position, implying a greater risk of going out of business. Therefore, managers should be interested to avoid any sort of mismanagement or reduced effort.

et al. (1988b), among others, who indicate that managers may resist corporate takeovers by applying diverse defensive tactics.

In summary, the market for corporate control appears to be a governance mechanism that serves as a last resort after other, predominantly internal mechanisms have failed to react.

2.2.4.3 Market Competition

Apart from a country's legal or regulatory environment and the market for corporate control, competitive forces in product and managerial labor markets may serve as external mechanisms of corporate control. The basic notion is similar to the one of neo-classical economics which claims that the market takes care of all inefficiencies.[178]

Such inefficiencies may include costs resulting from mismanagement or managerial diversion of corporate resources which are eventually reflected in a company's product prices. As pointed out by Jensen (1986), competition in product markets leads to a price-equilibrium with a minimum average cost of activity. It can be argued that this necessarily increases pressure on management to enhance efficiency of resource allocation and, hence, to cost-efficiently run their companies in order to stay competitive and to survive in the market.[179] Managers may be particularly interested to avoid losing competitiveness and possibly going into bankruptcy due to the loss of benefits associated with their position[180] and potential reputation costs that would worsen their chances for attractive future employment opportunities.

Moreover, managers find themselves in a situation of competition with other executives from inside and outside the firm. In this context, they may not only be interested to avoid bad news in connection with their person but to perform

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[178] Alchian (1950) and Stigler (1958) have expressed the view that managerial discretion cannot survive in competitive markets. This intuition has been empirically supported by Giroud/Mueller (2007).

[179] See Hart (1983), p. 366; Jensen (1986), p. 323; Baily/Gersbach (1995), p. 308; Sirmans (1999), p. 2; Börsch-Supan/Köke (2002), p. 312.

[180] See Grossman/Hart (1982), pp. 108, 131.

exceptionally well for reasons of internal promotion and external advancement.[181]

Given the assumption that managerial labor markets are highly competitive and adequately assess the managerial talents[182], executives are only able to guard their positions if they are successful in what they are supposed to do: create and maximize long-term shareholder value. Otherwise, they will get replaced by other managers who are at least as well qualified and who are more committed to the job.

However, it is often questioned how efficient those market mechanisms actually work.[183] Jensen (1993) and Schillhofer (2003), for instance, allude that product and factor markets do not instantaneously perform their control function but start to react only after a certain time-lag.[184] Furthermore, it can be asserted that the market mechanism in managerial labor markets does only work well in business sectors with a great pool of skilled and qualified executives. If there is only a limited number of individuals with the necessary skills and experiences to run a particular company, managers are obviously less pressured, for they are aware of their significance for the company.

For reasons of market inefficiencies, one can conclude that market competition, similarly to the market for corporate control, does only serve as a potential secondary control mechanism that may come into effect after other governance mechanisms have failed.

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[181] See Alchian/Demsetz (1972), p. 788; Stapledon (1996), p. 11; Ghosh/Sirmans (2003), p. 291.

[182] See Fama (1980), p. 292.

[183] See for instance Demsetz/Lehn (1985), p. 1159; Stapledon (1996), pp. 15f.

[184] See Jensen (1993), p. 850; Schillhofer (2003), p. 43.

2.3 Listed Property Vehicles

To get an idea of the companies being examined in the course of this dissertation, the two following chapters shall define the two principal types of listed property vehicles. These include publicly traded real estate companies as a more general form and real estate investment trusts (REITs) as a more specific form of listed property vehicles.

2.3.1 Publicly Traded Real Estate Companies

In a number of countries publicly traded real estate companies are not defined by law and do not reveal any regulatory peculiarities that clearly distinguish this type of corporation from a judicial point of view. As a consequence, there is no unanimous definition of publicly traded real estate companies in practice and in literature.[185]

Nevertheless, by virtue of their assets, public real estate companies differ decisively from other listed companies. Therefore, an appropriate definition can be derived from the field of activity and the corporate objective. Thereafter, publicly traded real estate companies may generally be defined as companies that are regularly traded on a stock exchange and that have a principal share of revenues originating from real estate-related activities, which essentially include the acquisition, management and sale of real estate assets.[186] Real estate brokerage firms, construction companies and service providers, such as facility management or real estate consulting firms, do not fall into that category.

As an indirect investment vehicle, publicly traded real estate companies provide investors with the opportunity to invest in income producing real estate assets with relatively low levels of equity capital, to better diversify their portfolio and to benefit from increased liquidity. However, there is a difference to other indirect forms of real estate investments, e.g. open-end and closed-end real estate funds, which can basically be traced back to the unique characteristics of

[185] See Rehkugler (2003), p. 5; Rehkugler et al. (2005), p. 12.

[186] See Pfnür (2004), p. 259. Broader definitions further include the development of real estate assets as principal field of activity; see for instance Rehkugler (2003), pp. 5f; Rehkugler et al. (2005), pp. 12f.

public capital markets. The value of the investment does not only reflect the property-specific qualities, the conditions of regional real estate asset markets and general economic conditions but also accounts for the sentiment of capital market participants. It is their assessment and belief concerning the future prospects of the property company that determines its market value. Thus, investors have to understand both, real estate and equity markets, to make sound investment decisions.

2.3.2 Real Estate Investment Trusts

Real Estate Investment Trusts (REITs) are a particular form of listed property companies which was initially created and introduced by US Congress in 1960 with the intention to enable individual investors to invest in large-scale real estate properties and mortgages.[187] The major difference to regular publicly traded real estate companies is that REITs are exempt from corporate taxation.[188]

In order to obtain a REIT status and thereby benefit from the associated tax release, companies need to meet certain criteria or requirements, which can largely be confined to the following. First, most of the REIT's total assets must be real estate, mortgages, cash and government securities. Second, a major share of the REIT's revenues has to originate from direct or indirect ownership of real estate (rents, mortgage interests, etc.). Third, REITs typically have to be widely held. And fourth, they are required to pay out most of their taxable income to shareholders.[189]

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[187] See Campbell/Sirmans (2002), p. 391; Chan et al. (2003), p. 3; Hartzell et al. (2004), p. 7; Block (2006), p. 42. In the USA there are basically three types of REITs that need to be differentiated: equity REITs, mortgage REITs and hybrid REITs. Equity REITs usually purchase, manage, maintain, sell and occasionally develop real estate properties, whereas mortgage REITs invest in securitized loans that are secured by real estate assets; see for instance Block (2006), p. 10. The third type is a combination of the equity and mortgage REITs.

[188] See Geltner/Miller (2001), p. 635; Chan et al. (2003), p. 3; Clauretie/Sirmans (2003), p. 421; Block (2006), p. 42.

[189] See Friday et al. (1999), p. 73; Geltner/Miller (2001), p. 636; Campbell/Sirmans (2002), pp. 389f.

Since their inception, REITs have obtained tremendous international recognition as a principal vehicle for indirect investments in real estate. Numerous countries around the world have introduced their own REIT regime following the US role model: at first the Netherlands (1969), Australia (1971) and Luxemburg (1988), which were later followed by Belgium (1995), Japan (2000), France (2003), the UK (2007) and Germany (2007), among others. By virtue of the varying national legislations, the individual regimes are different from one another with respect to the exact design of the REIT regulation. For an overview of the differences between selected REIT-regimes see table 3.

Table 3: General Overview of Selected REIT Regimes

	USA	Netherlands	France	UK	Germany
Name of Regime	US Real Estate Investment Trust (US-REIT)	Fiscale Beleggingsinstelling (FBI)	Société d'Investissements Immobiliers Cotée (SIIC)	UK Real Estate Investment Trust (UK-REIT)	German Real Estate Investment Trust (G-REIT)
Year of Inception	1960	1969	2003	2007	2007
Income and Asset Restriction (Real Estate)	min. 75%	100%	100%	min. 75%	min. 75%
Ownership Restriction	min. 100 shareholders; max. 50% of shares held by 5 or fewer shareholders	max. 25% of shares held by an individual shareholder	max. 60% of shares held by an individual shareholder	max. 10% of shares held by an individual shareholder	max. 10% of shares held by an individual shareholder
Dividend Payout Ratio Restriction	min. 90%	100%	min. 85%	min. 90%	min. 90%

Source: Own illustration following EPRA (2007).

3 Corporate Governance of Publicly Traded Real Estate Companies: A Global Perspective

3.1 Reasons for the Rising Importance of Corporate Governance in Real Estate Capital Markets

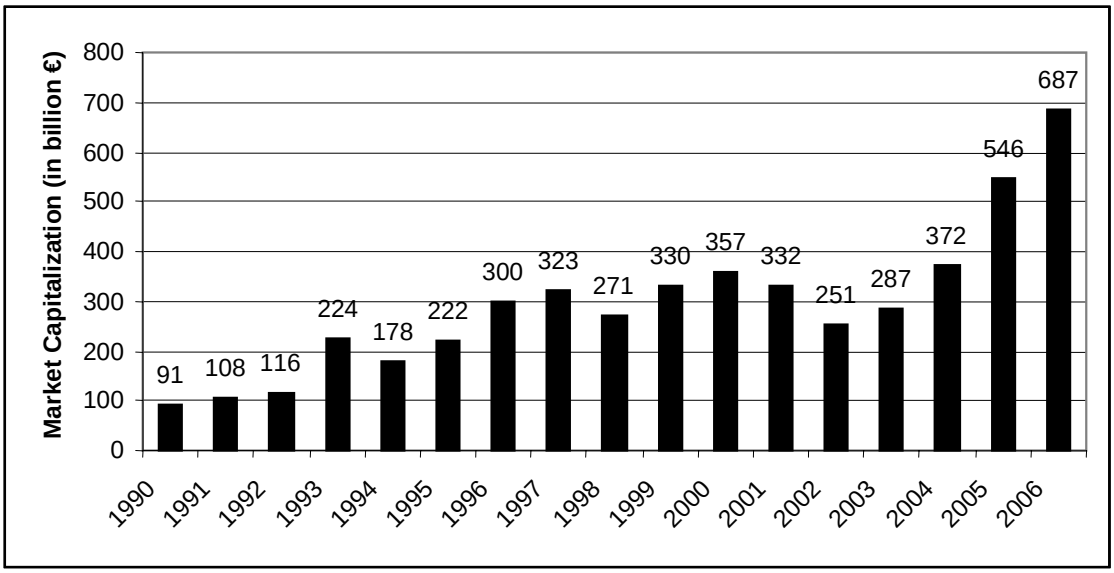
Within the last two decades basically four major capital market trends can be identified that have significantly contributed to an increasing relevance of corporate governance in the public real estate sector worldwide. These include the increasing significance of capital markets for real estate funding, the professionalization or institutionalization of shareholdings, a more tense competition for international capital and numerous financial and accounting scandals of the recent past. While the first development is specific to the public real estate sector, the three remaining trends also apply to capital markets in general.

3.1.1 Increasing Significance of Capital Markets for Real Estate Funding

Over the past years, there has been a continuing tendency toward the capitalization of real estate via capital markets[190] which is documented by the considerable growth of public real estate markets worldwide. Since the early 1990s the market capitalization of the global universe of publicly traded real estate companies, represented by the FTSE EPRA/NAREIT Global index, has increased from € 91 billion in 1990 to € 687 billion in 2006 which corresponds to a relative increase of 655% in 16 years (see figure 6). Most of the growth can be attributed to the period from 2003 to 2006. During that time market capitalization has increased on average by 34% per year.

[190] See Raiman (1999), p. 21; Sirmans (1999), p. 1.

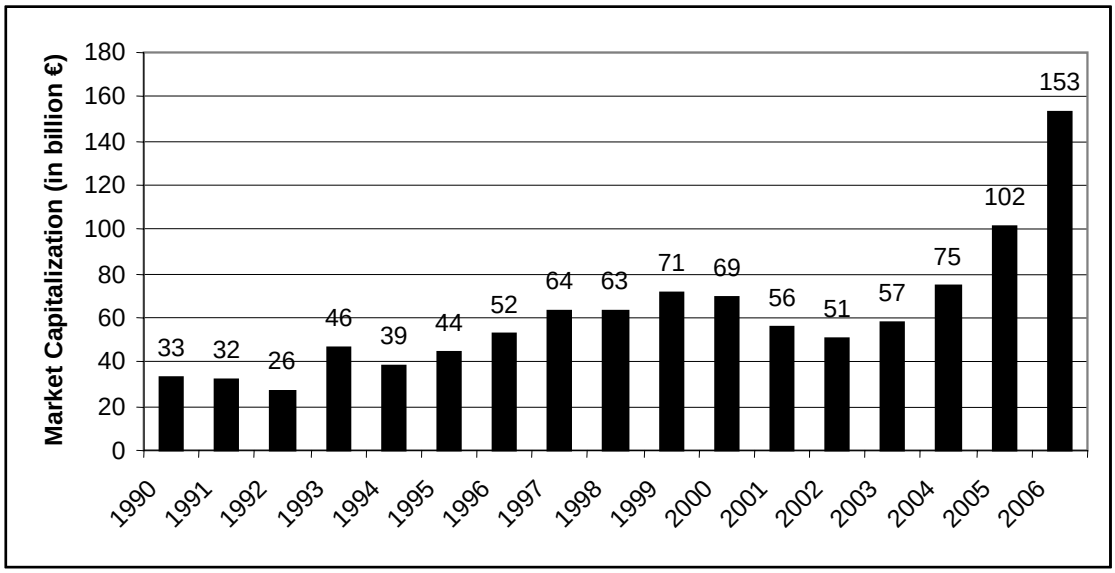
Figure 6: Development of FTSE EPRA/NAREIT Global Market Capitalization between 1990 and 2006



Source: EPRA Index Database (2007).

In Europe, a similar development can be observed. Here, the market capitalization of publicly traded real estate companies, represented by the FTSE EPRA/NAREIT Europe index, has more than quadrupled from € 33 billion in 1990 to € 153 billion in 2006 (see figure 7). As in the case of the global public real estate market, exponential growth can be documented in the past few years. Between 2003 and 2006 market capitalization has increased on average by 39% per year.

Figure 7: Development of FTSE EPRA/NAREIT Europe Market Capitalization between 1990 and 2006



Source: EPRA Index Database (2007).

An increasing relevance of organized capital markets as providers of external finance for real estate investments necessarily entails a separation of ownership and control[191] with all the problems previously specified. As a result, it can be argued that corporate governance becomes increasingly important in the public real estate industry.

3.1.2 Institutionalization of Shareholdings

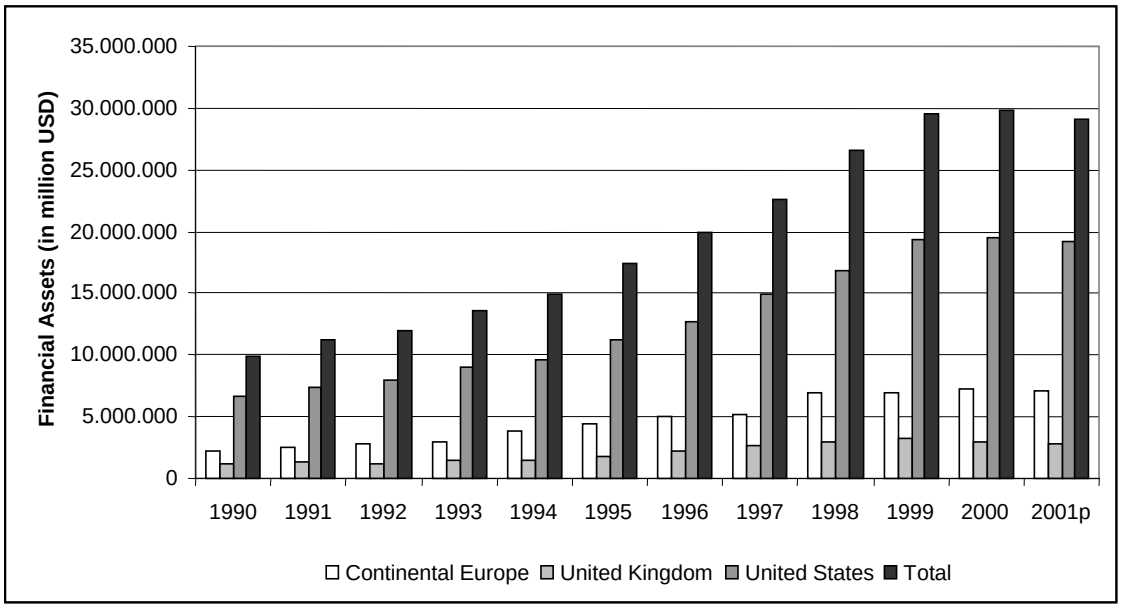
In addition, there is a general trend toward institutionalization of shareholdings[192] which basically refers to the process of accumulation and managing of capital by professional investors, such as insurance companies, mutual and pension funds. Institutional investors have become significant players in global equity markets. Between 1990 and 2001 financial assets controlled by this type

[191] See also Sirmans (1999), p. 1; Roulac (2000), p. 387.

[192] See Smith (1996), p. 227; Nestor/Thompson (2001), p. 20; Learmount (2002), pp. 5f; Gillan/Starks (2003), p. 3; Becht et al. (2002), pp. 11f; Drobetz et al. (2004), p. 268. The trend of institutionalization of shareholdings can also observed for real estate capital markets; see Chan et al. (1998), p. 372; Downs (1998), p. 638; Roulac (2000), p. 387; Chan et al. (2003), p. 94.

of investors have increased by approximately 193% in the USA, by 146% in the UK and by 213% in Continental Europe (see figure 8).

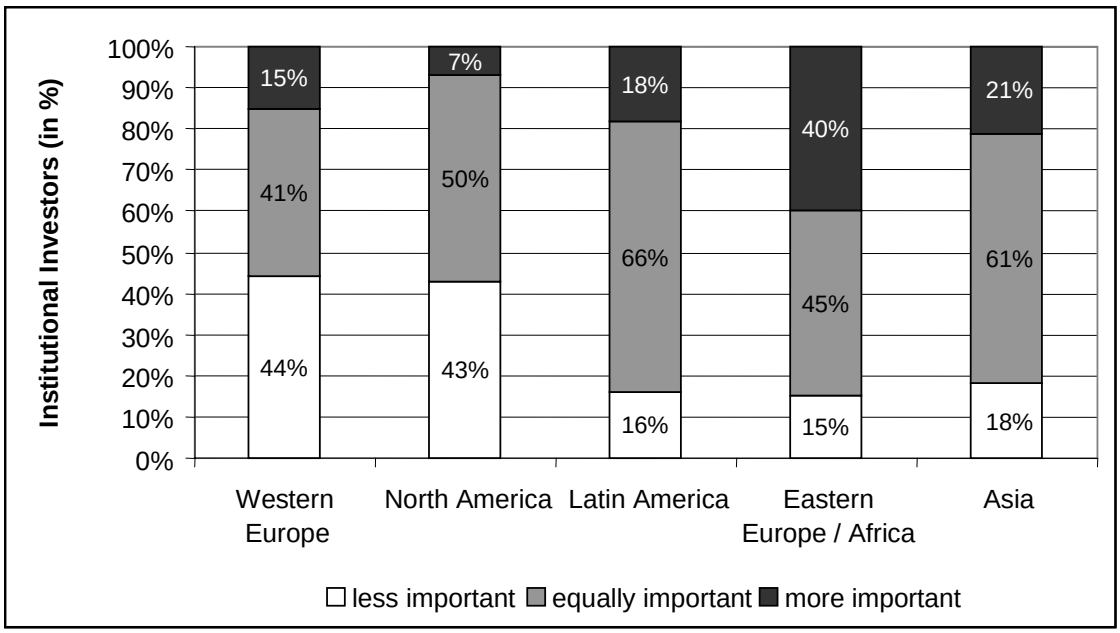
Figure 8: International Development of Financial Assets Held by Institutional Investors between 1990 and 2001



Source: OECD Statistical Database (2003).

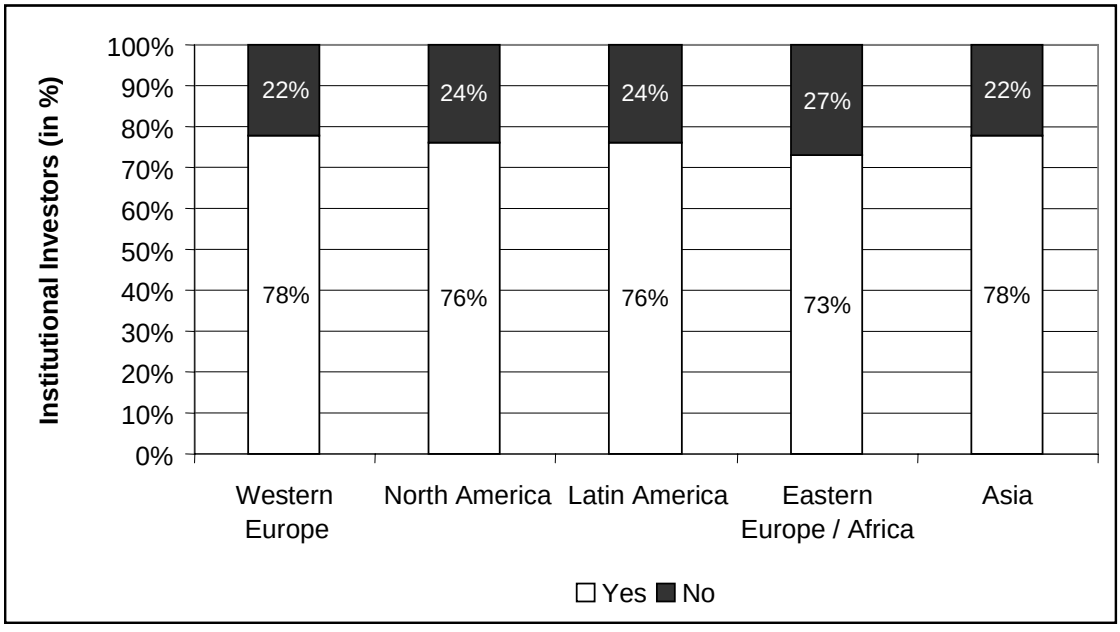
Some of this growth may be attributed to reforms of national pension systems (e.g. in Germany and Italy) which require individuals to increasingly deal with growing capital resources for retirement rather than relying on the state. Institutional investors professionally manage the capital assets of private individuals on the principle of diversification using the most modern techniques in pursuing their investment strategies. In this context, good firm-specific corporate governance has become a critical screening criterion for institutional investors when evaluating investment opportunities. According to the “Global Investor Opinion Survey” conducted by McKinsey & Company in 2002, corporate governance is considered equally or more important than financial figures in North America as well as in Western Europe by approximately 55% of all institutional investors being addressed (see figure 9). In addition, roughly 75% of the respondents claimed that they were willing to pay an average premium of 13-30% for well-governed companies (see figures 10 and 11).

Figure 9: Significance of Corporate Governance Relative to Financial Figures for the Decision Making Process of Institutional Investors by Region



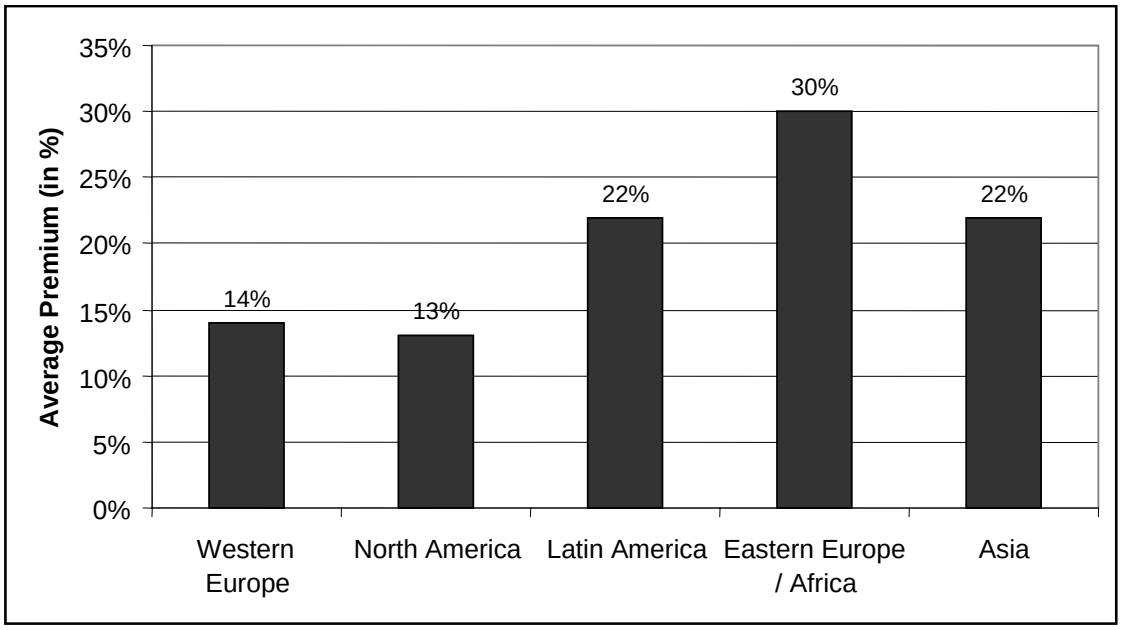
Source: Own illustration following McKinsey & Company (2002).

Figure 10: Institutional Investors' Willingness to Pay a Premium for a Well-governed Company by Region



Source: Own illustration following McKinsey & Company (2002).

Figure 11: Size of the Premium Institutional Investors are Willing to Pay by Region



Source: Own illustration following McKinsey & Company (2002).

As asset gatherers, institutional investors have large capital resources at hand and consequently are very influential in capital markets. They are able to exert great pressure on publicly traded real estate companies either directly by exercising control rights or indirectly by selling shares of companies that do not comply with internationally recognized corporate governance standards.[193]

3.1.3 Competition for International Capital

The integration of international capital markets and the competition for international funds can be considered as another reason for an increasing awareness of corporate governance.[194]

Based on the idea of diversification benefits, institutional investors increasingly tend to allocate a certain percentage of their funds to international equities instead of holding a purely domestic portfolio. At the same time, certain companies desire to attract foreign capital. Fast growing companies in Europe, for in-

[193] For a similar but more general argumentation see Gillan/Starks (2003), p. 1.

[194] See Nestor/Thompson (2001), pp. 19f; Becht et al. (2002), pp. 12f.

stance, have been increasingly raising capital by cross listing on foreign exchanges[195], since national capital markets were too small to cost-efficiently provide enough capital to finance their growth.

However, the decision to broaden the investor base on an international scale requires the respective companies to commit to international investment values and standards, predominantly set by institutional investors from the US and the UK. This includes Anglo-Saxon corporate governance standards, which are generally regarded as a role model.[196] In this view, it appears that firms with better corporate governance structures have a non-negligible advantage over competitors since they are able to access capital markets at lower costs.[197] This is particularly true for companies with large growth opportunities.

3.1.4 Financial and Accounting Scandals

Finally, numerous examples of financial and accounting scandals of the recent past (e.g. Enron, WorldCom, Tyco, Parmalat, Siemens), caused by malpractice of corporate management[198], intensified the discussion on corporate governance issues.

By the time cases of financial fraud or managerial expropriation were revealed, equity value of the respective companies declined dramatically. Some companies were even forced into bankruptcy.[199] As a consequence, investors increasingly demand higher transparency and better control mechanisms in order to protect their invested funds.

In response to the widespread failure in financial reporting, four fundamental changes could be observed. First, audit firms started to divest or to spin off their consulting business in order to avoid potential conflicts of interest. Second, Ar-

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[195] See Pagano et al. (2002), p. 2652.

[196] The financial strength and dominant presence of US and UK institutional investors in international capital markets have contributed to a spread of shareholder value orientation and equity culture outside the Anglo-Saxon countries and have fostered a process of cross-national convergence of corporate governance principles.

[197] See Doidge et al. (2004), p. 2.

[198] See Becht et al. (2002), p. 14.

[199] See Agrawal/Chadha (2005), pp. 371f.

thur Andersen, one of the “Big Five” audit firms, went out of business due to financial fraud accusations. Third, the Sarbanes-Oxley Act, imposing a number of corporate governance rules on all publicly traded companies in the US, was signed into US law in 2002. And finally, in 2003, the New York Stock Exchange (NYSE) and NASDAQ introduced an additional set of corporate governance rules, applicable to most publicly traded companies in the US.[200] These US corporate governance reforms have accelerated corporate governance activity around the world.[201]

[200] See Agrawal/Chadha (2005), p. 372.

[201] See Wong (2004), p. 9.

3.2 Corporate Governance Standards in the Real Estate Industry

3.2.1 Need for Real Estate-Specific Corporate Governance Standards

The developments, described above, indicate that it has become crucial for public real estate companies to adapt to internationally recognized corporate governance standards in order to be able to compete with peers for international capital on a long-term basis.[202]

Over the years, numerous national and international[203] corporate governance codes have been developed and implemented that institutionalize internationally accepted corporate governance principles with the aim to increase transparency in global equity markets and to promote the confidence of investors and the public in the management and supervision of publicly traded companies. These codes represent so-called “soft laws” or “best practice guidelines” that complement a country’s legal rules and usually work on a “comply-or-explain” principle. Thereafter, companies are not necessarily obliged to strictly follow the recommendations but to explain any deviations from the code.

It is necessary to point out that the real estate industry is characterized by some peculiarities that are not captured by contemporary corporate governance codes, which generally address all publicly traded companies without making any sector-specific distinctions. Particularly, the high degree of intransparency resulting from the local and decentralized nature of real estate markets as well as the non-standardized nature of real estate transactions[204] require a special consideration in the design of corporate governance codes to adequately address agency conflicts that are specific to publicly traded real estate companies.

In addition to traditionally cited avenues of wealth expropriation, which have been discussed earlier in chapter 2.1.5, managers of publicly traded real estate

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[202] For a similar but more general argumentation see Nestor/Thompson (2001), p. 2; Doidge et al. (2004), p. 2; Drobetz et al. (2004), p. 268.

[203] These include, for instance, the “OECD Principles of Corporate Governance”, which have become an international benchmark for policy makers, investors, corporations and other stakeholders worldwide; see OECD (1999).

[204] See Bone-Winkel (1994), p. 28; Friday (1997), p. 77; Sirmans (1999), p. 4; Freyend (2006), p. 149. For a more detailed elaboration on the uniqueness of the public real estate sector and its implications for agency relationship and corporate governance see chapter 3.3.

companies dispose of a variety of alternative ways to divert corporate resources, including advising, consulting and property management agreements as well as real estate transactions involving related parties.[205] One major source for agency conflicts stems from transactions with firms owned by managers or other related parties that are not conducted at arms' length. Here, associates of firm insiders may receive exclusive rights to purchase, sell or lease real estate properties of publicly traded real estate companies for terms that are more favorable than under competitive market conditions.[206] In some cases, predominantly in the REIT universe, operational authority is transferred to an external advisor, which is frequently owned by firm insiders, directors or large shareholders.[207] This situation creates substantial conflicts between the advisor and the shareholders of publicly traded real estate companies, especially if the advisor manages his own portfolio or has advisory agreements with other publicly traded real estate companies. In such a case, the advisor may select more lucrative properties for their own operations providing the advised company with second best properties.[208] Furthermore, the advisor might be interested in selling properties from one advised company to another, even though this is not in the best interest of their shareholders. Similarly, they may have an incentive to increase the size of the publicly traded real estate company, if their fees are tied to gross invested assets, though this may be detrimental to shareholder value creation.[209]

Given the importance of corporate governance and the need to adjust existing corporate governance codes to the needs of the real estate sector, it is interesting to see whether there have been efforts within the real estate sector to develop and deliver industry-wide corporate governance standards that provide a practical guideline for publicly traded real estate companies and their investors.

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[205] See Friday (1997), p. 76. A comprehensive discussion on agency problems in publicly traded real estate companies is provided by Sagalyn (1996).

[206] See Sagalyn (1996), p. 36.

[207] See Friday (1997), p. 14.

[208] See Schotland (1980), pp. 161, 176; Sagalyn (1996), p. 36.

[209] See Sagalyn (1996), p. 36.

3.2.2 Role of Professional Real Estate Associations in Framing Corporate Governance Standards

For real estate-specific corporate governance standards to be widely accepted and supported, they have to be designed and released by highly reputed professional institutions that largely represent the companies within the industry. Such institutions include the Royal Institution of Chartered Surveyors (RICS) and the European Public Real Estate Association (EPRA), on a cross-national level, and the National Association of Real Estate Investment Trusts (NAREIT) and the Initiative Corporate Governance der Deutschen Immobilienwirtschaft (ICG), on a national level.

The following paragraphs are supposed to briefly describe the purpose of these institutions and to examine the extent to which each of them has dealt with corporate governance issues and whether they have defined or published real estate-specific corporate governance principles.

3.2.2.1 Royal Institution of Chartered Surveyors

The Royal Institution of Chartered Surveyors (RICS), founded in London in 1868, is one of the most respected and highly recognized organizations for real estate professionals worldwide. It counts more than 120,000 members and operates out of 146 countries with the objective to regulate and promote the real estate profession, to set and maintain the highest educational and professional standards and to provide independent advice, analysis and guidance.

RICS membership, which is considered to be a hallmark in the real estate industry, is only granted to professionals who are prepared to abide by the organization’s stringent rules of conduct. These rules require RICS members, among others,

- to act at all times with integrity and to avoid conflicts of interest and any actions or situations that are inconsistent with their professional obligations,
- to carry out their professional work with due skill, care and diligence and with proper regard for the technical standards expected of them,

- to carry out their professional work in a timely manner and with proper regard for standards of service and customer care expected of them,
- to undertake and record appropriate lifelong learning and, on request, to provide RICS with evidence that they have done so,
- to ensure that their personal and professional finances are managed appropriately,
- to submit in a timely manner such information, and in such form, as the Regulatory Board may reasonably require,
- to co-operate fully with RICS staff and any person appointed by the Regulatory Board.[210]

By its efforts, RICS is contributing to a more professional and ethical behavior of real estate professionals, including managers of publicly traded real estate companies. Accordingly, they should be less inclined to expropriate wealth of shareholders. However, though RICS occasionally addresses governance issues in diverse newspaper and journal publications, it has not yet developed distinct corporate governance principles for the real estate industry.

3.2.2.2 European Public Real Estate Association

Formed in 1999, the European Public Real Estate Association (EPRA) is a non-profit organization with headquarters in the Netherlands. Its members include the majority of the leading (listed) real estate companies and investment institutions in Europe that together hold more than € 300 billion of real estate assets. The active participation of the member's senior executives and respected real estate experts ensures that EPRA is a genuinely representative forum and policy-making body.

Its primary mission is to promote, develop and represent the European public real estate sector. In close co-operation with the National Association of Real Estate Investment Trusts which promotes the US-REIT industry, EPRA strives

[210] See RICS (2007).

to set and maintain standards of best practice in accounting, reporting and corporate governance. In January 2006, the EPRA Best Practices Committee published a set of revised Best Practice Policy Recommendations that reflect information requirements of investors as well as analysts and contribute to an increasing transparency and comparability of listed property companies in Europe.[211]

Only recently, EPRA released a research study on the corporate governance practices of European listed property companies. Defining the percentage of performance-based executive compensation, the independence of the supervisory board, the existence of auditing mechanisms and the level of public disclosure as key factors of corporate governance, they generate a governance score for each property firm listed in the FTSE EPRA/NAREIT Europe Index. They find a large variation of average corporate governance quality across and within different countries. The UK, the Netherlands and Switzerland turned out to be the countries with the highest average corporate governance scores.[212]

3.2.2.3 National Association of Real Estate Investment Trusts

With more than 2,000 members, including listed real estate companies, investors and academics, the National Association of Real Estate Investment Trusts (NAREIT) is a high-profile professional institution representing the US REIT and publicly traded real estate industry with a combined market capitalization of currently more than USD 312 billion as of year-end 2007.[213]

Within the last couple of years, NAREIT has been involved in roundtable discussions and research studies on corporate governance. In 2005, for instance, NAREIT sponsored a “Benchmark Survey”, which covered corporate governance in addition to other topics, such as tenant and investor relations.

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[211] Even though, the EPRA Best Practice Policy Recommendations cannot be considered as a comprehensive corporate governance code, they are concerned with a crucial element of corporate governance in publicly traded real estate companies and that is the transparency of real estate-specific disclosure. For further details on the EPRA Best Practice Policy Recommendations see chapter 3.2.3.1.

[212] See EPRA (2008), p. 2.

[213] See NAREIT (2008).

Nevertheless, it has to be pointed out that NAREIT has not yet developed own corporate governance standards, best practice recommendations or rules of conduct. It merely provides a guideline on the public disclosure of funds from operations (FFO), which were devised by NAREIT's Best Practice Council to enhance the quality of financial reporting and disclosure practices in the REIT industry.[214]

3.2.2.4 Initiative Corporate Governance der Deutschen Immobilienwirtschaft

The Initiative Corporate Governance der Deutschen Immobilienwirtschaft (ICG) is a registered association that was formed in Fall 2002 with the intention to prepare and to establish principles of transparent and professional management in the German real estate industry. Counting well-known corporate and individual members from the German property sector, the initiative has achieved remarkable results since its inception six years ago.

[214] See NAREIT (2004), p. 1.

Table 4: Principles of Proper and Fair Management in the Real Estate Economy

Principles of Proper and Fair Management in the Real Estate Economy
1. Professionalism, Transparency and Fairness in relation to shareholders / trustees ("investors"), business partners, tenants, staff and the public are the indispensable basis of entrepreneurial activity in the real estate sector, which constitutes an important part of the national economy. Compliance with these principles strengthens confidence in the real estate economy. For this reason, companies – in particular the providers of services – which do not operate real estate business in the narrower sense also feel bound by these principles; a significant part of the following provisions therefore is not applicable to them on a word-for-word basis.
2. Enterprises that work in or for the real estate economy operate their business in the interests of the investors and / or principals and are dedicated to the aim of increasing the value of the enterprise / real estate assets.
3. The management has the necessary suitability and sufficient experience. It ensures the continuing further education of managers, junior managers and specialists.
4. Expert supervisory and consultation bodies improve the decision-making quality in real estate transactions. These bodies are appointed accordingly, and are provided with anticipatory, clear and comprehensive information by the management.
5. An appropriate valuation of the real estate assets is undertaken in accordance with recognized valuation methods by qualified, independent experts on the basis of up-to-date and objective market information. The valuation method and its alteration, and the market values of the real estate portfolios, are explained in a suitable way.
6. Real estate business usually involves a high capital commitment and long-term planning. For this reason, the establishment and continuing further development of an internal monitoring system and risk management is indispensable.
7. Conflicts of interest between staff, members of the management, supervisory and consultation bodies on the one hand and the real estate enterprise on the other hand, or between the enterprise and the investors, must be avoided or disclosed through suitable regulations.
8. The audit of the annual accounts is important for the protection of investors and the establishment of confidence. The criteria of independence and qualification will be strongly emphasized in the selection of the auditors.
9. The business model of the real estate enterprise, the organizational structure and the participation situation must be clearly shown, and any alterations explained.
10. The information policy is characterized by the principles of credibility and equal treatment. Real estate enterprises provide information to institutional and private investors, German and foreign, and other market participants in an objective, clear, comprehensive form and language appropriate to the addressee, as well as in suitable media.

Source: ICG (2005).

The first major milestone was the release of the “Principles of Proper and Fair Management in the Real Estate Economy” which are presented in table 4. These principles commit the members of the sector to respect certain values, such as professionalism, transparency and fairness. Another milestone was the development of the “German Corporate Governance Code for the Real Estate Economy”[215], which was adopted by the members’ meeting in 2003. This code contains real estate-specific recommendations that help to alleviate conflicts of interest in publicly traded real estate companies and explicitly addresses issues, such as the valuation of real estate and the monitoring by the supervisory board. Moreover, the initiative has worked on further projects, including the de-

[215] See ICG (2003). For further details on the German Corporate Governance Code for the Real Estate Economy see chapter 3.2.3.2.

sign of a value management system and a concept of certification for good corporate governance.

3.2.3 Selected Transparency and Corporate Governance Standards in the Real Estate Industry

As pointed out above, only the European Public Real Estate Association and the Initiative Corporate Governance der Deutschen Immobilienwirtschaft provide standards for real estate-specific transparency and corporate governance in a broader sense. The respective standards will be presented in the two subsequent chapters.

3.2.3.1 EPRA Best Practice Policy Recommendations

Since 2005, all publicly traded companies in Europe are legally required to report in accordance with the International Financial Reporting Standards (IFRS), which were created by the International Accounting Standards Board (IASB) to improve comparability of financial statements around the world. Inasmuch as these standards address all publicly traded companies without distinction, they are not specific enough to account for sector-related characteristics.

With respect to the real estate sector, EPRA strives to fill this particular gap with their Best Practice Policy Recommendations, a well established and widely-accepted industry standard for more transparent reporting practices that was released in a revised version in January 2006. Complementing the IFRS, the recommendations provide listed real estate companies with guidance on real estate-specific disclosure.[216] They are structured as follows:

- General items and narrative,
- Accounting and valuation principles,
- Presentation of accounts,
- Notes and additional disclosure,
- Portfolio information,

[216] See EPRA (2006), p. 3.

- Net asset value and earnings per share.[217]

Apart from a dissemination of supplementary information on corporate management and strategy, EPRA therein recommends publicly traded real estate companies to depict more details on the property holdings in their financial reports. Such information is supposed to be presented in a disaggregate form, broken down by country and property type and includes the data displayed in table 5.

Table 5: Real Estate Portfolio Disclosure Recommendations by EPRA

	Property-Specific Data Items
Investment Property: Rental Data	▪ Gross rental income ▪ Net rental income ▪ Lettable space ▪ Passing rent ▪ Estimated rental value ▪ Vacancy rate
Investment Property: Valuation Data	▪ Property valuation ▪ Valuation movement in the year ▪ Gross/net initial yield ▪ Reversion
Investment Property: Like for Like Net Rental Income for the last two years	▪ Properties owned throughout the past 2 years ▪ Acquisitions ▪ Disposals ▪ Development property ▪ Exchange translation difference ▪ Total net rental income
Investment Property: Lease Data	▪ Average lease length ▪ Passing rent of leases expiring at different points in time ▪ Estimated rental value of leases expiring at different points in time ▪ Passing rent subject to review at different points in time ▪ Estimated rental value of passing rent subject to review at different points in time
Development and Redevelopment Property	▪ Costs to date ▪ Costs to complete ▪ Future interest to be capitalized ▪ Forecast total cost ▪ Forecast completion date ▪ Lettable space ▪ Percentage let ▪ Estimated rental value on completion

Source: Own illustration following EPRA (2006), pp. 30ff.

[217] See EPRA (2006), p. 5.

Pursuing the aim of encouraging uniform, comparable and transparent performance reporting, they suggest applying fair value accounting rather than cost accounting. Not only does it reflect the current value of the properties more accurately, but it also allows performance benchmarking with direct property market indices, e.g. the Investment Property Databank (IPD).[218]

To further enhance comparability, EPRA Best Practice Policy Recommendations also propose standard formats for balance sheets, cash flow statements as well as the calculation and disclosure of key financial figures, such as earnings per share (EPS) and net asset value (NAV).[219]

3.2.3.2 German Corporate Governance Code for the Real Estate Economy

The German Corporate Governance Code for the Real Estate Economy, released by CGI in 2003, supplements the more general German Corporate Governance Code[220] with the purpose to account for issues and characteristics that are unique to the real estate industry.

These real estate-specific amendments are intended to increase professionalism and transparency in publicly traded real estate companies[221], especially through regular real estate valuations, the regulation of conflicts of interest and better professional qualifications. For a deeper insight, the single amendments are presented below:

- "3.1.i: The executive board and the supervisory board in the principal companies in groups of companies must carefully monitor the management of the transactions of dependent companies, in particular with regard to real estate activities.

[218] See EPRA (2006), p. 13.

[219] See EPRA (2006), pp. 19, 21, 35ff.

[220] The German Corporate Governance Code was developed by the Government Commission on Corporate Governance and came into effect in 2002.

[221] The amendments also apply to non-property companies with substantial real estate holdings and property companies that are intended for future listing on the stock exchange.

- 3.3.i: As far as real estate enterprises are concerned, this[222] in particular applies to fundamental alterations of valuation methods the purchase and sale of real estate and project development of the enterprise's own sites above a threshold to be fixed depending on the size of the enterprise.
- 3.9.i: Real estate transactions between the enterprise and members of the executive board or the supervisory board should be avoided. To the extent to which they are nevertheless concluded, they must be subject to the consent of the supervisory board.
- 4.2.i: Members of the executive board of companies that operate in the real estate business must have relevant training or sufficient experience. In executive boards of companies whose group companies operate in the real estate business to an extent that can have a considerable influence on the assets situation, the financial situation and the income situation of the controlling enterprise, at least one member of the executive board should have special knowledge or sufficient experience in the real estate business.
- 4.3.6.i: In case of real estate transactions by the enterprise, even the appearance of a conflict of interest should be avoided. In every such transaction, the interests of the enterprise alone must be safeguarded. Members of the executive board may under no circumstances derive personal advantages from transactions of the enterprise. Privately conducted real estate transactions and private commissions regarding such transactions by members of the executive board should be disclosed to the chairman of the supervisory board. The members of the executive board should ensure compliance with the principles for the avoidance of conflicts of interest, in particular in case of transactions between associated enterprises, the purchase and sale of real estate and the award of commissions in the real estate sphere. The supervisory board should establish rules of procedure for individual cases.

[222] "This" here refers to the specification of provisions by the articles of association or the Supervisory Board, requiring the approval of the supervisory board for transactions of fundamental importance.

- 5.1.1.i: In case of real estate transactions of considerable importance, the supervisory board should ensure that its members are informed sufficiently well and in good time, appropriately regulate the frequency and time budget for meetings in accordance with the transaction volume and the business requirements, and assist the members in fulfilling their supervisory function more easily. Banking institutions can establish special rules for rescue bids that may diverge from this.
- 5.3.2.i: In real estate enterprises, the supervisory board or the audit committee should deal with the valuation of the existing real estate assets. This task can also be transferred to a separate valuation committee.
- 5.4.1.i: In supervisory boards of companies whose group companies operate in the real estate business to an extent that can have a considerable influence on the assets situation, the financial situation and the income situation of the controlling enterprise, at least one member of the supervisory board should have special knowledge or sufficient experience in the real estate business. In supervisory boards of real estate companies, a sufficient number of supervisory board members should have such special knowledge or experience.
- 5.5.1.i: Paragraph 4.3.6.i applies by analogy to the members of the supervisory board.
- 6.1.i: Real estate companies should also publicize real estate transactions without delay if their respective total volume exceeds 5% of the balance sheet value of the sites and buildings that are shown as fixed assets, floating assets and participation assets. This does not apply to rescue bids by banking institutions.
- 7.1.1.i: Legally recognized valuation methods must be used for the valuation of real estate. These valuation methods, and changes to them, must be explained in the annex to the annual accounts, together with the reasons for them. The business report or the annex should also state the market value (excluding real estate investment assets used by the company itself) and the valuation methods used for its determination, together with any changes made to them. If no market value is stated in relation to the individual real

estate asset, the greatest possible transparency should be achieved by stating generally applicable (e.g. DIX) regional and/or use-specific clusters that were assessed on the basis of the individual market values.

- 7.2.2.i: Contracts with auditors concerning additional consultancy services for real estate companies should be submitted to the supervisory board for consent if the cumulative fees due for these services exceed 50% of the remuneration for the annual audit. Section 114 of the Stock Corporation Act applies by analogy to this extent."[223]

Although, the German Corporate Governance Code for the Real Estate Economy is not legally binding, it provides managers with a basic frame of reference in order to improve the governance structure of publicly traded real estate companies. However, it does not appear to be useful in assessing the quality of firm-specific corporate governance since the extent to which the single recommendations have been implemented cannot always be verified by external observers.

To gain a deeper insight into the corporate governance structure of publicly traded real estate companies, the following chapter theoretically explores the influence of asset- and vehicle-specific characteristics on the relevance of particular governance mechanisms.

[223] ICG (2003).

3.3 Unique Corporate Governance Structure of Publicly Traded Real Estate Companies

Previously conducted research by Gillan et al. (2003) suggests that corporate governance structures, in fact, do not necessarily resemble but differ across industries.[224] Consistent with this view, publicly traded real estate companies, as opposed to listed companies from other business sectors, appear to have a special set of agency issues and a distinct corporate governance structure.[225] This distinctiveness largely stems from the unique characteristics of real estate as an asset class as well as the regulatory requirements associated with the adoption of a tax-transparent REIT structure[226], including income and asset restrictions, ownership restrictions and dividend payout policy restrictions. The extent to which these characteristics affect the governance structure of publicly traded real estate companies shall be described in the subsequent chapters.

3.3.1 Implications of the Characteristics of Real Estate Assets for Corporate Governance

There are some unique characteristics and features of real estate that distinguish this particular asset class from other assets or commodities. Two of the most important characteristics include immobility and heterogeneity.[227]

Real estate is an immobile asset that is bound to a particular location, embedded in a micro economic and a macro economic environment. The fact that two properties can never share the exact same location, varying degrees of building quality as well as different property types make real estate a very het-

[224] See Gillan et al. (2003), p. 28.

[225] See Sagalyn (1996), p. 35; Friday (1997), p. 8; Bebchuk et al. (2005), p. 16; Feng et al. (2005), p. 282; Bauer et al. (2006), p. 1; Eichholtz/Kok (2008), p. 142; Ghosh/Sirmans (2006), p. 328.

[226] See Sagalyn (1996), p. 35.

[227] For a more comprehensive depiction of the characteristics of real estate as an asset class see Bone-Winkel (1994), pp. 27ff. and Schäfers (1997), pp. 74ff.

erogeneous and non-standardized asset.[228] These characteristics tend to aggravate agency problems between management and shareholders in publicly traded real estate companies[229] for the following reasons.

Due to the heterogeneous nature of real estate, the collection of property-specific information is very toilsome and costly[230], entailing a general lack of transparency in real estate asset markets.[231] In the corporate setting, outside shareholders may therefore find it extremely difficult to assess and to monitor corporate real estate transactions[232], on the one hand, and the performance of the company's current real estate portfolio, on the other hand. In this regard, shareholders are particularly interested in current market values of the underlying properties in order to get a clear picture on whether wealth has been created by management. Clearly, to accurately determine fair market values, shareholders need to closely investigate and analyze property-specific information[233] and have to develop a profound understanding of local real estate markets in which the respective properties are located.[234] The difficulty to obtain such information and to assess fair market values[235] leaves managers with a higher level of information than investors, implying greater information asymmetries with respect to the principal-agent relationship. Consequently, managers have the opportunity to exploit their informational advantage. Using data on US equity REITs, Damodaran/Liu (1993), for instance, find evidence that managers

[228] See Bone-Winkel (1994), p. 28; Friday (1997), p. 77; Sirmans (1999), p. 4. Based on this intuition, real estate markets tend to be highly segmented in terms of location and property type; see also Geltner/Miller (2001), p. 4.

[229] See Sirmans (1999), p. 4.

[230] See Sirmans (1999), p. 5. In a more general context, Brennan (1990), pp. 709f, makes a similar point for latent assets.

[231] See Bone-Winkel (1994), p. 28; Schäfers (1997), p. 76; Geltner/Miller (2001), p. 13.

[232] See Wang et al. (1993), pp. 189f; Friday (1997), p. 77; Friday/Sirmans (1998), p. 411; Friday et al. (1999), p. 87; Han (2006), p. 474.

[233] Such property-specific information may include rental rates, expense ratios and vacancy rates; see for instance Wang et al. (1993), p. 190; Friday (1997), p. 8.

[234] See Friday (1997), pp. 8f; Friday/Sirmans (1998), p. 411; Han (2006), p. 474.

[235] See Brueggeman et al. (1993), p. 573; Wang et al. (1993), p. 189; Friday/Sirmans (1998), p. 411; Feng et al. (2005), p. 282. In a more general context, Brennan (1990), pp. 709f, makes a similar point for latent assets.

use property appraisals by professional real estate appraisers[236] to divert financial wealth from shareholders by trading on the appraisal information prior to public disclosure.

As a result of the lack of transparency as well as greater information asymmetries, real estate asset markets are typically characterized by market inefficiencies[237], preventing market mechanisms to work properly. As argued by Sirmans (1999), the mechanism of market competition does only reduce agency problems when the traded commodities are standardized. Thus, the more specific or unique the underlying assets, as it is the case with real estate, the greater the related agency problems.[238]

In the light of the above, it can be concluded that the heterogeneous and non-standardized nature of real estate assets induces greater agency problems between managers and shareholders due to a substantial lack of transparency and increased information asymmetries. Based on this intuition, it is reasonable to presume that any effort to improve the transparency of listed property companies' operations by providing value-relevant information on the single properties of corporate portfolios and on the respective local real estate markets will be highly appreciated by capital market participants. As a consequence, it seems likely that transparency of disclosure[239], plays an even more important role in the corporate governance structure of publicly traded real estate companies than in the one of publicly traded companies from other business sectors with more homogenous and standardized products. Following a similar line of argumentation, Friday/Sirmans (1998) stress the importance of the board of directors in monitoring management since real estate transactions are difficult to evaluate for shareholders.

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[236] Such appraisals are conducted on a regular basis to provide shareholders of publicly traded real estate companies with information on the current aggregate property value.

[237] See Friday (1997), p. 77.

[238] See Sirmans (1999), p. 4. Williamson (1985), p. 56, pronounces the importance of asset specificity as a fundamental explanation for corporate governance issues.

[239] This particularly includes the dissemination of real estate-specific information.

3.3.2 Implications of REIT-specific Regulation for Corporate Governance

The organizational form of a REIT is linked to a stringent set of regulations that constrain managers' freedom of operational and strategic decision-making.[240] Such constraints are generally believed to offer less opportunities for agency conflicts to develop[241] and thus to protect shareholders and other parties of interest against managerial discretion[242]. Consistent with this view, REITs attain top scores in an inter-industry corporate governance ranking[243] that is published by Institutional Shareholder Services (ISS). However, Ghosh/Sirmans (2003) and Bauer et al. (2006) further argue that the REIT-specific regulation leads to a situation in which there is less need for traditional corporate governance mechanisms. This implies that the restrictions, associated with a qualification for a REIT status, weaken alternative control mechanisms, which are important in the corporate governance structure of non-REIT companies.[244]

3.3.2.1 Implications of Income and Asset Restrictions for Corporate Governance

Depending on the respective REIT regime, typically more than 75% of a company's income and assets must originate from or held in cash, government securities and real estate assets, including direct property holdings, leaseholds, options in land or improvements, other REIT shares and mortgages.[245] As a consequence, the scope of investment opportunities available to REIT managers is largely limited to sector-specific assets. This may have positive effects on

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[240] See Sagalyn (1996), p. 34.

[241] See Kanda/Levmore (1991), p. 247; Ghosh/Sirmans (2003), p. 291; Jiraporn/Gleason (2007), pp. 23, 32. Eichholtz/Kok (2008) contend that the REIT-specific regulation contributes to more transparency. In a more general sense, Demsetz/Lehn (1985) argue that regulation helps to discipline and control managers of regulated firms.

[242] See Ghosh/Sirmans (2006), p. 328.

[243] See Feng et al. (2005), p. 282.

[244] See Han (2006), p. 472.

[245] See Allen/Sirmans (1987), p. 176; Feng et al. (2005), p. 283; Ghosh/Sirmans (2006), p. 333.

the agency relationship, as potential value-destroying diversification strategies of managers to pursue empire building objectives are largely prevented.[246]

At the same time, asset restrictions appear to have a negative implication for the corporate governance structure of REITs, especially with regard to the market for corporate control. The contention here is that managers are not able to gather experiences in other industries than real estate, which decisively limits their chances of employment after a potential hostile takeover.[247] Therefore, there is an increased probability that managers will resist hostile takeover attempts and, hence, entrench themselves in order to prevent losing their jobs.[248] Empirical support for this hypothesis is furnished by Allen/Sirmans (1987), Campbell et al. (1998), Campbell et al. (2001) and Eichholtz/Kok (2008) who find virtually no hostile takeovers in the REIT sector.[249]

Accordingly, one may conclude that the market for corporate control does not work properly as a potential control mechanism in the REIT world.[250] This conclusion suggests that alternative corporate governance mechanisms, particularly the monitoring role of the board of directors and the incentive effects of managerial ownership, are more critical in the corporate governance structure of REITs.[251]

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[246] See Ghosh/Sirmans (2006), p. 328.

[247] See Ghosh/Sirmans (2003), p. 292; Feng et al. (2005), p. 283; Ghosh/Sirmans (2006), p. 328; Han (2006), pp. 473f. As argued by Hartzell et al. (2004), labor market for managers with real estate-specific knowledge and experiences is very limited.

[248] See Ghosh/Sirmans (2003), p. 292; Hartzell et al. (2004), p. 11; Feng et al. (2005), p. 283; Ghosh/Sirmans (2006), pp. 328, 333; Han (2006), pp. 473f.

[249] Eichholtz/Kok (2008) contend that the market for corporate control does not work properly in the public real estate sector as a whole. They were neither able to find empirical evidence for hostile takeover activity for REITs nor for publicly traded real estate companies without REIT status.

[250] See Campbell et al. (2005), p. 230; Bauer et al. (2006), p. 1.

[251] See Hartzell et al. (2004), p. 11; Han (2006), p. 472.

3.3.2.2 Implications of Ownership Restrictions for Corporate Governance

In addition to income and asset restrictions, REIT regulation sometimes also includes ownership restrictions that enhance dispersed shareholdings and prevent larger accumulations of equity stakes.[252]

Such restrictions may comprise the so-called “excess shareholder provision”, also known as the “5-50” rule, which requires that the five largest shareholders of a US-REIT jointly do not own more than 50% of the total shares outstanding.[253] Similarly, ownership restrictions of the UK and German REIT regimes prohibit individual shareholders to own more than 10% of the total shares outstanding. Other ownership restrictions may demand a minimum number of shareholders.[254]

It is commonly agreed among academics that such ownership restrictions intensify agency problems in REITs.[255] The motivation for this belief is twofold. First, the active monitoring role, generally ascribed to large blockholders, is limited since the formation of blockholdings is essentially deterred.[256] Edelstein et al. (2001) conjecture that a limited ownership stake may reduce large shareholders’ ability, willingness and efforts to control the management of REITs. Consistent with this intuition, Ghosh/Sirmans (2003) find no empirical support for the monitoring and disciplining benefits by institutional shareholders in equity REITs. Hence, if institutional shareholders do not pursue a role of active investors, their relevance for the governance structure of REITs should be negligible.[257]

Second, ownership restrictions of the kind described above can be an effective obstacle for unsolicited tender offers[258] and thus may be an alternative ex-

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[252] The principal REIT regimes subject to the empirical analysis in chapter 5 do not have tight ownership restrictions. Despite its relevance in the global context, the following line of argumentation seems to be of minor importance for the empirical analysis of this dissertation.

[253] See Sirmans (1999), pp. 8f; Ghosh/Sirmans (2003), p. 291; Feng et al. (2005), p. 282; Ghosh/Sirmans (2006), p. 333.

[254] See Ghosh/Sirmans (2003), p. 291; Feng et al. (2005), p. 282.

[255] See Sirmans (1999), p. 23; Ghosh/Sirmans (2003), p. 291.

[256] See Sirmans (1999), p. 23; Ghosh/Sirmans (2003), p. 291; Bauer et al. (2006), p. 1; Ghosh/Sirmans (2006), p. 328.

[257] See Han (2006), p. 474. For a similar argumentation see Campbell et al. (2001), p. 362.

[258] See Sirmans (1999), p. 9; Chan et al. (2003), p. 85.

planation for the absence of hostile takeovers in the REIT universe[259]. This view further supports the notion of ineffectiveness of the market for corporate control as a disciplinary force. Parallel to the argumentation in the previous chapter, it therefore appears that board monitoring plays a more important role in the case of REITs.[260]

3.3.2.3 Implications of Dividend Payout Restrictions for Corporate Governance

To qualify as a REIT, a company also has to pay out most of its net taxable profits to shareholders. Depending on the respective REIT regime, the mandatory dividend payout ratio lies between 85% and 100%.

One may argue that such high dividend payouts alleviate agency problems by reducing the discretionary cash flows at managers' disposal.[261] Accordingly, managers have less opportunity to waste capital on non-profitable, value-decreasing investment projects.

On the other hand, substantial dividend payout ratios leave managers with limited internal funds to finance corporate growth.[262] As a result, REITs are forced to rely more heavily on external financing than other companies which induces them to return to capital markets more often.[263] The necessity of raising funds externally on a regular basis exposes REITs to greater scrutiny by capital markets.[264] In this respect, Hartzell et al. (2004) emphasize the importance of institutional investors. Contrary to the contention in the previous chapter, they argue that institutional monitoring and disciplining may be more important for REITs than for other companies.[265] Eventually, REITs will only be successful in

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[259] See Sirmans (1999), p. 8; Feng et al. (2005), p. 282.

[260] See Feng et al. (2005), p. 282.

[261] See the free-cash-flow hypothesis of Jensen (1986), p. 323.

[262] See Campbell et al. (2001), p. 362. Despite substantial costs related to the issuance new securities, REITs frequently pay out more dividends than required by regulations. Wang et al. (1993) and Chan et al. (2003) attribute the fact to the monitoring role of capital markets, which helps to reduce agency costs.

[263] See Sirmans (1999), p. 8; Hartzell et al. (2004), p. 7; Ghosh/Sirmans (2006), p. 328. For a more generalized conclusion see Easterbrook (1984), pp. 654f.

[264] See Friday (1997), p. 21.

[265] See Hartzell et al. (2004), pp. 4f.

their quest for capital if their management has proven to be motivated and competent enough to create sufficient shareholder value, if there are promising investment opportunities on the way[266] and if a sound corporate governance setting is in place[267].

In summary, the requirement of high dividend payouts, as opposed to the other restrictions, merely seems to have a positive effect on the corporate governance structure of REITs.

[266] See Ghosh/Sirmans (2006), p. 331.

[267] See Martin (2007), p. 13.

4 Impact of Corporate Governance on Firm Value

4.1 Theoretical Relationship between Corporate Governance and Firm Value

From a theoretical as well as a professional perspective a decisive issue with respect to corporate governance is whether capital markets actually reward it. To better understand the theoretical relationship between corporate governance and firm value, it is necessary to go back to the fundamentals of corporate valuation. According to Williams (1964), Copeland et al. (1994), Damodaran (2006) and Kruschwitz/Löffler (2006), among many others, the value of a company is generally dependent on its ability to generate cash flows in the future. Firm value is determined by discounting future free cash flows[268] with an appropriate opportunity cost of capital reflecting the risks associated with the company being valued.[269] In general terms, the value of a company can be written as:

$$Firm\ Value = \frac{FCF_1}{1+r} + \frac{FCF_2}{(1+r)^2} + \cdots + \frac{FCF_n}{(1+r)^n} + \frac{TV_n}{(1+r)^n}, \tag{4.1}$$

where FCF stands for free cash flows, n for the final year of the forecast period, TV for terminal value[270] and r for the opportunity cost of capital. The latter is basically composed of the cost of debt and the cost of equity. Unlike the interest rate on debt, the cost of equity cannot be directly observed and largely varies across different investors depending on their expectations regarding a company's future returns.[271] Companies that investors perceive as being more risky entail higher expected future returns in order to adequately compensate for that risk. Equation 4.1 is based on the intuition that for a given level of ex-

[268] Free cash flow corresponds to the amount of cash that the company generates after deduction of operating expenses, capital expenditures and taxes. It only includes real cash items; non-cash expenses, such as depreciation and amortization, are excluded.

[269] See Copeland et al. (1994), p. 71; Damodaran (2006), p. 27.

[270] The terminal value equals the projected value of a company at the end of the forecast horizon where a period of extraordinary growth passes into a period of stable growth. It is added to the free cash flows of the final year of projections which are discounted to the present.

[271] See Damodaran (2006), p. 28.

pected future free cash flows the market is willing to pay more to the extent that realization of these free cash flows is more certain and less to the extent that their realization is less certain.

In this context, agency costs can be interpreted as one of the risk factors being accounted for in the cost of capital. This notion is consistent with the argumentation of Lombardo/Pagano (2000) who extend the classical capital assets pricing model (CAPM)[272] to account for costs resulting from the agency relationship between managers and shareholders. In the presence of agency costs, rational investors demand a premium for bearing agency risk[273], ultimately raising a company's cost of capital.[274] In other words, the higher the agency costs of a particular firm, the higher the inherent risk and the lower the value of the firm. From a theoretical point of view "good" corporate governance is expected to reduce agency costs[275] and therefore to have a positive effect on corporate value.[276] It seems quite reasonable that investors are willing to pay a premium for companies with better corporate governance structures in expectation to receive higher dividends in the future.[277]

[272] The capital asset pricing model, developed by Sharpe (1964), Lintner (1965) and Treynor, is a conceptual cornerstone of modern capital market theory which serves as an instrument to measure the risk of a company and to translate this risk into an expected rate of return corresponding to the cost of equity capital. It is based on the assumption of perfect capital markets and relies merely on beta as firm-specific risk measure. However, capital markets are in fact imperfect due to the existence of transaction costs and information asymmetries. Therefore Chatterjee et al. (1999) and others argue that beta by itself is an unreliable proxy of a firm's risk premium because other relevant firm-specific risk factors are being ignored.

[273] See Williamson (1985), p. 305.

[274] See Stulz (1996), p. 16; Ashbaugh et al. (2004), p. 1; Pham et al. (2007), p. 2.

[275] Lombardo/Pagano (2000), Schillhofer (2003) and Doidge et al. (2004) indicate that corporate governance reduces the cost of capital since it allows investors to sacrifice less time and resources to monitoring while expecting that the company is governed well.

[276] See Lombardo/Pagano (2002), p. 1.

[277] See La Porta et al. (2002), p. 1147.

4.2 Empirical Evidence on the Impact of Corporate Governance on Firm Value

4.2.1 Empirical Evidence on the Impact of Corporate Governance on Firm Value in Finance Literature

The effect of corporate governance on firm performance has been subject to numerous empirical studies in Finance literature. Most of them rely on Tobin's Q as the principal measure of firm performance.[278] Nevertheless, the studies are characterized by a lack of standardization; they differ in terms of country-focus, choice of corporate governance mechanisms, data sources and the choice of the statistical methodology being applied.

The majority of the empirical studies examining the relationship between corporate governance and firm value focus on single governance mechanisms in isolation, as the ones depicted in figures 12 and 13.

Figure 12: Selected Finance Studies on the Impact of Single Corporate Governance Mechanisms on Firm Value (I)

Authors	Sample	Methodology	Measure of Firm Value	Details
Morck et al. (1988a)	n = 371 1980 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Significant, non-monotonic relationship between management ownership and firm value: Tobin's Q first increases, then decreases, and finally increases again slightly as insider ownership rises ▪ Older firms, run by member of founding family, have lower firm values
McConnell/Servaes (1990)	n = 1,173, 1,093 1976, 1986 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Significant curvilinear relationship between insider ownership and firm value: Positive relation until insider ownership level reaches 40-50%, then a slightly negative relation
Hermalin/Weisbach (1991)	n = 142 1971 - 1983 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ No noticeable relationship between the proportion of outside directors and firm value
Chung/Pruitt (1996)	**n = 404 1986 (USA)**	**Empirical study using multivariate regression (3SLS)**	**Tobin's Q**	**▪ Significantly positive relationship between the level of CEO ownership and firm value ▪ At the same time, Tobin's Q is a determinant of CEO ownership**
Yermack (1996)	**n = 452 1984 - 1991 (USA)**	**Empirical study using multivariate regression (OLS)**	**Tobin's Q**	**▪ Significantly negative relationship between board size and firms' market value ▪ Smaller boards are more likely to dismiss CEOs for bad performance**
Loderer/Martin (1997)	n = 867 1978 - 1988 (USA)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ No evidence that larger executive ownership leads to better performance ▪ Find that acquisition performance and Tobin's Q affect the size of managers' stockholdings
Conyon/Peck (1998)	n = 3,690 1990 - 1995 (Europe)	Empirical study using multivariate regression (GMM)	Tobin's Q	▪ Significantly negative relationship between board size and firm performance for all countries being reviewed: UK, France, Netherlands, Denmark and Italy

Source: Own illustration.

[278] Tobin's Q represents the relation between market value and replacement costs and serves as a popular valuation measure in financial literature. For more details on Tobin's Q and its qualities over other performance measures it is referred to chapter 5.3.1.1.

Figure 13: Selected Finance Studies on the Impact of Single Corporate Governance Mechanisms on Firm Value (II)

Authors	Sample	Methodology	Measure of Firm Value	Details
Himmelberg et al. (1999)	n = 330 - 600 1982 - 1992 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ No evidence that changes in managerial ownership affect firm value
Bhagat/Black (2002)	n = 780 - 934 1988 - 1993 (USA)	Empirical study using multivariate regression (3SLS)	Tobin's Q	▪ Strong inverse relation between firm performance and board independence ▪ Evidence that low-profitability firms increase the independence of their boards
Loderer/Peyer (2002)	n = 169 1980 - 1995 (Switzerland)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Significantly negative relationship between board size and firm value ▪ Seat accumulation (increasing number of board mandates) is negatively related to firm value
Anderson/Reeb (2003)	n = 403 1992 - 1999 (USA)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ Significantly positive relationship between founding-family ownership and firm value ▪ Evidence of better firm performance when family members serve as CEO instead of outside CEOs
Gompers et al. (2003)	n = 1,500 1990 - 1998 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Construction of a CG-index considering 24 governance-rules as proxies for shareholder rights (focus on the defense of hostile takeovers) ▪ Companies with strong shareholder rights feature higher market values
Beiner et al. (2004)	n = 165 2001 (Switzerland)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ Board size is an endogenous governance mechanism ▪ No significant relationship between board size and firm valuation

Source: Own illustration.

A great deal of attention has thereby been drawn to insider ownership and its impact on firm value. Chung/Pruitt (1996), for instance, present strong empirical evidence that the level of CEO stockholdings is positively related to Tobin's Q.[279,280] Similarly, Anderson/Reeb (2003) reveal a significantly positive association between founding family ownership and firm value. In turn, Morck et al. (1988a) and McConnell/Servaes (1990) find a non-monotonic, curvilinear relationship between the level of insider ownership and Tobin's Q, characterized by a positive effect for the lower ownership percentiles and a negative effect for the upper ownership percentiles. Other studies, including Loderer/Martin (1997) and Himmelberg et al. (1999) do not find any indication that changes in managerial ownership affect the market value of companies.

Another aspect of corporate governance that has attracted major attention in financial literature is board structure. Yermack (1996) provides a prominent study concentrating on board size. Consistent with the notion that small boards of directors tend to work more effectively and perform a better monitoring job,

[279] In addition, they were able to find support for the hypothesis that firm value affects CEO ownership. This notion has also been supported by Loderer/Martin (1997).

[280] Consistent with these findings, Eisenberg et al. (1998) document a significantly negative association between board size and firm profitability, as proxied by ROA.

he finds an inverse relationship between the size of the board and firm value for a sample of US companies. With the exception of Beiner et al. (2004), these findings are supported by Conyon/Peck (1998) and Loderer/Peyer (2002) who conduct a similar analysis for a European and a Swiss sample, respectively. Apart form board size, corporate governance studies on board structure frequently deal with the independence of the board. Though it is often alleged that a greater proportion of outside directors affects the quality of corporate governance, Hermalin/Weisbach (1991) and Bhagat/Black (2002) fail to find a positive association between board independence and Tobin's Q.[281]

As opposed to the studies mentioned above, Gompers et al. (2003) study anti-takeover provisions for 1,500 US firms during the 1990s. Using Investor Responsibility Research Center (IRRC) data, they classify 24 indicators into five groups: tactics for delaying hostile takeover, voting rights, director/officer protection, other takeover defenses and state laws. Overall, they report evidence that firms with stronger shareholder rights have higher firm values.

Another strain of empirical work investigates the influence of a broad set of corporate governance mechanisms on the market valuation of publicly traded companies. A representative selection for this type of studies is presented in figure 14.

[281] In contrast, Baysinger/Butler (1985) and Rosenstein/Wyatt (1990) find a positive linkage between board independence and firm performance, as measured by ROE and stock return. Similarly, Weisbach (1988) finds evidence that CEOs of poorly performing firms are more likely to be replaced if the firm has a majority of outside directors on the board.

Figure 14: Selected Finance Studies on the Impact of a Set of Corporate Governance Mechanisms on Firm Value

Authors	Sample	Methodology	Measure of Firm Value	Details
Agrawal/Knoeber (1996)	n = 383 1987 (USA)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ Selection of 7 control mechanisms ▪ No significantly positive impact of any corporate governance mechanisms on firm value after accounting for endogeneity
Bauer et al. (2004)	n = 249 - 269 2000 - 2001 (Europe)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Application of CG-ranking provided by Deminor ▪ Positive relationship between CG and valuation of companies that are listed in the FTSE Eurotop 300
Drobetz et al. (2004)	n = 91 2001 (Germany)	Empirical study using multivariate regression (OLS)	Tobin's Q, Market-to-Book	▪ Construction of a broad CG-index following the German Corporate Governance Code (survey-based) ▪ Significantly positive relationship between CG and valuation of publicly traded companies in Germany
Klapper/Love (2004)	**n = 374 1999 (Emerging Markets)**	**Empirical study using multivariate regression (OLS)**	**Tobin's Q**	**▪ Application of CG-ranking provided by Credit Lyonnais Securities Asia ▪ Significantly positive relationship between CG and firm valuation ▪ Evidence that firm-level CG provisions matter more in countries with weak legal environments**
Beiner et al. (2006)	**n = 235 2002 (Switzerland)**	**Empirical study using multivariate regression (3SLS)**	**Tobin's Q, Market-to-Book**	**▪ Construction of a CG-index (survey-based) plus additional CG-mechanisms ▪ Positive relationship between CG and valuation of publicly traded companies in Switzerland**
Black et al. (2006)	n = 515 2001 (Korea)	Empirical study using multivariate regression (2SLS/3SLS)	Tobin's Q, Market-to-Book	▪ Construction of a broad CG-index (survey-based) ▪ Strong positive relationship between CG and valuation of publicly traded companies in Korea

Source: Own illustration.

The seminal paper of Agrawal/Knoeber (1996) examines seven corporate governance mechanisms and their relevance in controlling agency problems between managers and shareholders. The selected mechanisms comprise managerial ownership, institutional ownership and blockownership, board independence, leverage, the labor market for managers and the market for corporate control. The relevant data is obtained from Forbes magazine's annual survey of top executive compensation, a Disclosure CD-ROM, Standard & Poor's (S&P) Register of Corporations, Directors and Executives, as well as the COMPUSTAT annual files. Although, they are not able to find a significant impact of any of the corporate governance mechanisms on firm value, they provide direct evidence for interdependence among the single mechanisms for a large sample of US firms.

The studies of Bauer et al. (2004) and Klapper/Love (2004) follow a different approach, insofar as they use corporate governance rankings provided by professional organizations. Bauer et al. (2004) apply Deminor corporate governance ratings for companies listed in the FTSE Eurotop 300 and reveal a positive relationship between good corporate governance and firm valuation. Klapper/Love (2004) make use of data on firm-level corporate governance rankings provided by Credit Lyonnais Securities Asia. Covering companies from 14

emerging markets, they do not only find a strong positive correlation between corporate governance and Tobin's Q, but also report evidence that firm-level corporate governance provisions matter more in countries with weak legal environments.

Contrary to the two previous studies, Drobetz et al. (2004) develop their own corporate governance rating which has been tested for plausibility by the German stock exchange. The rating is based on survey data and captures 30 governance proxies divided into five broad categories, that are corporate governance commitment, shareholder rights, transparency, management and supervisory board matters and auditing. Using a sample of 91 publicly traded companies from Germany, Drobetz et al. (2004) show evidence for a positive correlation between firm-specific governance practices and firm valuation, as measured by Tobin's Q and Market-to-Book.

In line with Drobetz et al. (2004), Beiner et al. (2006) construct a survey-based corporate governance index for companies listed on the Swiss stock exchange. However, they apply five additional corporate governance mechanisms including shareholdings of the largest shareholder, shareholdings of large outside blockholders, board size, board independence and leverage. Allowing for interdependencies among the governance mechanisms, they document a significantly positive association between the aggregate corporate governance index and Tobin's Q, on the one hand, and between leverage and Tobin's Q, on the other hand. Like Agrawal/Knoeber (1996), they also find evidence for complementary and substitution effects between the single governance variables.

Black et al. (2006) provide another important empirical study relying on a corporate governance index. The index is based on a 2001 Korea stock exchange survey and is comprised of the following five subindices: shareholder rights, board structure, board procedure, disclosure and ownership parity. Using a similar estimation methodology as Agrawal/Knoeber (1996) and Beiner et al. (2006), they document a significantly positive impact of corporate governance on firm market valuation for a sample consisting of 515 Korean companies.

4.2.2 Empirical Evidence on the Impact of Corporate Governance on Firm Value in Real Estate Literature

While finance literature is replete with empirical studies on the impact of corporate governance on firm value, there is only limited research on the issue in real estate literature, which, in turn, is entirely concerned with the US REIT market. A selection of real estate studies analyzing the relationship between corporate governance and firm value is presented in figure 15.[282]

Figure 15: Selected Real Estate Studies on the Impact of Corporate Governance on Firm Value

Authors	Sample	Methodology	Measure of Firm Value	Details
Friday/Sirmans (1998)	n = 135 1980 - 1994 (USA)	Empirical study using multivariate regression (OLS)	Market-to-Book	▪ Higher percentage of external board members (up to 50%) and greater equity participation by inside directors leads to higher shareholder value for a sample of US REITs
Friday et al. (1999)	n = 675 1980 - 1994 (USA)	Empirical study using multivariate regression (OLS)	Market-to-Book	▪ Non-linear relationship between M/B-ratios and ownership structure of US equity REITs ▪ Insider ownership (up to 5%) is associated with increased M/B-ratios, thereafter M/B-ratios decline
Capozza/Seguin (2003)	n = 75 1985 - 1992 (USA)	Empirical study using multivariate regression (WLS)	Tobin's Q	▪ Evidence that higher levels of insider ownership are associated with a higher valuation of US REITs ▪ REITs with greater insider ownership choose properties with lower levels of systematic risk and capital structures with less debt
Hartzell et al. (2004)	n = 66 1992 - 2000 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Using governance data from proxy-statements ▪ No significant relationship between corporate governance and valuation of US equity REITs
Bauer et al. (2006)	n = 134 - 228 2002 - 2005 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Application of governance data provided by Institutional Shareholder Services (ISS) and Governance Metrics International (GMI) ▪ Significantly positive relationship between corporate governance and valuation of US REITs
Han (2006)	n = 156 1994 - 2000 (USA)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ Significant non-linear relationship between valuation of US equity REITs and insider ownership that is positive at low levels but turns negative at high levels of insider ownership

Focus on a broad set of corporate governance mechanisms Focus on single corporate governance mechanisms

Source: Own illustration.

Most of these studies examine the effect of particular aspects of corporate governance. Friday/Sirmans (1998), for instance, investigate the influence of board of director composition and insider ownership on the market value of US REITs, as proxied by the Market-to-Book ratio. They find evidence that greater

[282] Other real estate studies investigating wealth effects of corporate governance use alternative measures of firm performance, such as ROA and ROE. Analyzing a sample of 38 US REITs between 1972 and 1981, Solt/Miller (1985) find evidence that the payment of incentive fees is generally positively related to financial performance, as measured by ROA and ROE. In turn, Ghosh/Sirmans (2003) provide results indicating that greater board independence enhances ROE-levels of US REITs whereas greater CEO stock ownership appears to have an adverse effect on firm performance. In addition, Feng et al. (2005) find support for the view that board structure plays an important role in financial performance of US REITs. Their findings indicate that a smaller and more independent board of directors is associated with higher levels of ROA.

board independence[283] of up to 50% and greater dollar values of director stock ownership are associated with higher firm values. Using different measures of firm value, Friday et al. (1999), Capozza/Seguin (2003) and Han (2006) focus exclusively on insider ownership. They document a significantly positive relationship between the level of insider ownership and the market valuation of US REITs. In contrast to Capozza/Seguin (2003), Friday et al. (1999) and Han (2006) find a non-linear relationship with a positive effect up to the 5% ownership threshold.

Studies examining the impact of a broad set of corporate governance mechanisms on the market value of publicly traded real estate companies are hard to trace. However, two studies falling into that particular category include Hartzell et al. (2004) and Bauer et al. (2006). Using deviating samples of US REITs and different sets of governance variables, these studies obtain inconsistent results.

Hartzell et al. (2004) select board size, board independence, insider ownership, block ownership and institutional ownership as the principal mechanisms to capture the companies' corporate governance structure, while the corresponding data is directly extracted from the companies' proxy statements. Running a regular OLS regression of Tobin's Q against the different corporate governance mechanisms and a set of control variables, they are not able to detect any significant association between corporate governance and firm value.

By contrast, Bauer et al. (2006) make use of corporate governance ratings, provided by Institutional Shareholder Services (ISS) and Governance Metrics International (GMI). Applying the same estimation methodology as Hartzell et al. (2004), they, in turn, find that the corporate governance ratings are significantly positive related to firm value.

After all, it has to be pointed out that the studies presented above, particularly the ones in real estate literature, suffer from severe econometric problems that may cast doubt on the reliability of the obtained empirical results. In this

[283] Similarly, Ghosh/Sirmans (2003) and Feng et al. (2005) report a significantly positive association between greater outsider representation on REIT boards and performance, as measured by ROE and ROA.

respect, the following chapter is going to present some of the most relevant econometric shortcomings of previous empirical studies examining the impact of corporate governance on firm value.

4.3 Econometric Problems Related to Empirical Studies on Wealth Effects of Corporate Governance

Empirical research on the relationship between corporate governance and firm performance is often concerned with a variety of econometric issues, which can basically be traced back to the highly complex nature of corporate governance systems. Three major econometric problems that will be addressed in this chapter are measurement error in variables, omitted variable bias and endogeneity.[284]

In order to better understand these issues in the context of corporate governance research, it is necessary to point out that a well-developed theory about the multi-dimensional character of corporate governance or a conceptual framework of reference, capturing the entireness of all relevant control mechanisms and its interactions do not yet exist.[285] Therefore, it remains a challenge to adequately select governance characteristics that should be included in an empirical model and to choose an appropriate estimation tool that accounts for possible interrelations among diverse corporate governance mechanisms. The validity and reliability of corporate governance measures, inconsistent sets of corporate governance mechanisms as well as a poor consideration of interdependencies among different corporate governance measures might therefore be a possible explanation for often contradictory results of previous corporate governance studies.

One econometric problem plaguing corporate governance studies is measurement error in variables. Quite frequently, it is questioned whether single structural indicators[286] typically used to measure corporate governance actually reflect the essential aspects of this complex construct. A similar line of argu-

[284] For an excellent review of econometric problems in empirical studies on corporate governance see Börsch-Supan/Köke (2002).

[285] See Larcker et al. (2007), p. 965. As discussed by Harris/Raviv (2006) and Larcker et al. (2007), there is relatively little formal theoretical work on corporate governance.

[286] Larcker et al. (2007), p. 964, define structural indicators as measures of corporate governance that can be generated by external observers, such as board size, equity owned by officers, etc. Though it is also possible to develop corporate governance measures from inside the corporation, e.g. from interviews with board members, it is frequently infeasible for large sample analysis.

mentation emerges in the case of (self-constructed) corporate governance indices. These aggregate ratings are likely to be inadequate proxies for corporate governance for three basic reasons. First, important governance characteristics might not be considered. Second, the construction of the index is necessarily biased to the extent that weights are more or less arbitrarily assigned to certain governance indicators.[287] And third, corporate governance indices in terms of aggregate measures per se do not allow capturing the effect of dynamic interactions among governance mechanisms in an empirical model.

In recent corporate governance research, it has been a popular approach to apply governance indices offered by professional service providers[288], such as Deminor, Governance Metrics International (GMI) or Institutional Shareholder Services (ISS). It is often argued that their knowledge and experience in that field should translate into the quality of their measures and therefore correspond to an adequate way of explaining the corporate governance structure of companies. However, this perception does not seem to hold for the reasons stated above. Another problematic issue is the inherent “black box”-character of such indices. Details on the construction are not being published, leaving external observers clueless on how the respective institution generates its index.[289]

The measurement error in variables induced by the use of single structural indicators as well as corporate governance indices generally causes coefficient estimates to be biased and inconsistent.[290]

A second, well known econometric problem in empirical corporate governance research is the one of omitted variable bias. It occurs if relevant explanatory variables are missing in the structural model. In this particular case the

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[287] For a similar argumentation see Bruno/Claessens (2006), p. 4.

[288] Studies applying corporate governance indices of professional service providers include Bauer et al. (2004), Brown/Caylor (2004) and Bauer et al. (2006), among others.

[289] Sonnenfeld (2004) criticizes the quality of the governance metrics published by professional corporate governance data and service providers. He argues that they look merely at public records to score firms on their governance effectiveness by using simplistic checklists of standards or metrics based heavily upon myths, rather than on genuine research. He further points out that they also may cross the line from being independent raters to becoming active consultants for the firms they study leading to doubts about their objective credibility. Finally and most importantly, he holds the opinion that their methods do not deliver reliable and accurate governance ratings.

[290] See Börsch-Supan/Köke (2002), p. 317.

model is said to be underspecified.[291] Often, there is a practical limit to correctly specify a structural model since key explanatory variables are not available for inclusion. Sometimes, it is also the absence of a clear theory and the lack of knowledge on complex issues that cause relevant variables to be ignored or excluded.

However, previous studies focusing on single corporate governance mechanisms in isolation are very likely to suffer from omitted variable bias because they disregard a major part of a complex system of mechanisms and its interrelations. The consequence of omitted governance and control variables is that the coefficients of the included variables will be biased and inconsistent.[292] An empirical study that omits important variables could infer that an included variable has a positive/negative coefficient or is significant/insignificant even though it would not be with a more extensive set of variables.

A third, and according to Börsch-Supan/Köke (2002) probably the most serious econometric concern in studies on corporate governance is endogeneity and reverse causality.[293] Drawing on prior research, one may suspect that corporate governance mechanisms are highly interrelated, complement and even substitute each other. Hence, a greater use of one mechanism does not necessarily imply an increase in firm value; where one specific mechanism is used more others may be used less resulting in the same valuation.[294] In addition, Himmelberg et al. (1999) emphasize that a variety of economic factors likely affect both firm value and firm governance.[295] Therefore, it can be strongly assumed that corporate governance mechanisms are not exogenously given but endogenously determined[296], ultimately raising the econometric problem of joint endogeneity.

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[291] See Wooldridge (2000), pp. 89f.

[292] See Börsch-Supan/Köke (2002), p. 315.

[293] See Börsch-Supan/Köke (2002), p. 299.

[294] See Agrawal/Knoeber (1996), pp. 378f; John/Senbet (1998), p. 391; Peasnell et al. (2003), p. 232; Beiner et al. (2004), p. 334.

[295] See Himmelberg et al. (1999), p. 355.

[296] A variable is considered endogenous if it is determined within the model and exogenous if it is determined outside the model; see Pindyck/Rubinfeld (1998), p. 338. Empirical studies that find evidence for endogeneity of corporate governance mechanisms include Agrawal/Knoeber (1996), Chung/Pruitt (1996), Loderer/Martin (1997), Eisenberg et al.

A closely related issue that needs to be mentioned in this respect is the one of reverse causality. The direction of causality between corporate governance and firm value is not quite clear on a priori grounds. For instance, companies with high market values and large growth opportunities (greater profitability and less growth opportunities) might adopt better (weaker) governance structures because they have a greater (less) need for outside capital, but at the same time better governance could improve firm value (profitability).[297]

Previous literature largely ignores complex and dynamic interactions among governance mechanisms and the simultaneous nature of the process determining corporate governance and corporate value. In order to deliver more sophisticated and more reliable results on the relationship between corporate governance and firm value, the problems of joint endogeneity and reverse causality need to be accounted for.[298]

A standard econometric procedure to address these concerns is the estimation of simultaneous equations models[299] with the help of instrumental variables[300], which serve as an approximation for the potentially endogenous explanatory variables. Ideal instruments should be exogenous and preferably strongly correlated with the respective endogenous explanatory variable. At the same time, they should predict the dependent variable only indirectly via the endogenous explanatory variable and should not be influenced by the dependent variable.[301]

(1998), Bhagat/Black (2002), Ghosh/Sirmans (2003), Klapper/Love (2004), Beiner et al. (2006), Black et al. (2006) and Ghosh/Sirmans (2006).

[297] See Drobetz et al. (2004), p. 287; Klapper/Love (2004), p. 706; Black et al. (2006), p. 367; Bauer et al. (2006), p. 13.

[298] Corporate governance literature addressing the problems of endogeneity and reverse causality include, among others, Hermalin/Weisbach (1991), Agrawal/Knoeber (1996), Chung/Pruitt (1996), Eisenberg et al. (1998), Himmelberg et al. (1999), Bhagat/Black (2002), Ghosh/Sirmans (2003), Hermalin/Weisbach (2003), Beiner et al. (2004), Klapper/Love (2004), Beiner (2005), Beiner et al. (2006), Black et al. (2006) and Ghosh/Sirmans (2006).

[299] Simultaneous equations models are models in which two or more endogenous variables are determined simultaneously; see Hausman (1983), p. 392; Davidson/MacKinnon (1993), pp. 211f.

[300] As Davidson/MacKinnon (1993), p. 211, indicate there are numerous variants of instrumental variable estimation methods in econometrics, e.g. two-stage least squares (2SLS), three-stage least squares (3SLS) and the generalized method of moments (GMM).

[301] See Black et al. (2006), p. 384.

Before going into the details of the empirical analysis in chapter 5, the subsequent chapter is supposed to develop and summarize the main hypothesis that need to be tested.

4.4 Development of Hypotheses

Based on the argumentation in chapter 3.3, the market for corporate control as well as the market competition in labor and product markets can be assumed to play a negligible role in the corporate governance structure of publicly traded real estate companies. This leaves board structure (board size and board independence), incentive structure (insider ownership), ownership concentration (institutional ownership), capital structure (leverage) and transparency of disclosure as the major corporate governance mechanisms to be investigated in the empirical analysis presented in chapter 5.

With reference to chapters 2.2.3 and 2.2.4, “good” corporate governance is provided by a small and independent board of directors, a participation of management in the equity capital of the company, the presence of large professional shareholders, and a more transparent public disclosure practice. Placing this interpretation of “good” corporate governance in the context of the theoretical elaboration on the influence of corporate governance on firm value, as furnished in chapter 4.1, the following hypotheses ($H_{1\text{-}6}$) can be derived:

H_1: *A smaller board of directors is associated with a higher market valuation of publicly traded real estate companies,*

H_2: *A more independent board of directors is associated with a higher market valuation of publicly traded real estate companies,*

H_3: *A higher level of insider ownership is associated with a higher market valuation of publicly traded real estate companies,*

H_4: *A higher level of institutional ownership is associated with a higher market valuation of publicly traded real estate companies,*

H_5: *A higher leverage ratio is associated with a higher market valuation of publicly traded real estate companies,*

H_6: *A more transparent real estate-specific disclosure is associated with a higher market valuation of publicly traded real estate companies.*

In accordance with the intuition that corporate governance is a complex system of interacting mechanisms and that there might be a possible reverse relationship between corporate governance and firm value, three more general hypotheses (H_{7-9}) can be formulated:

H_7: *Different corporate governance mechanisms complement each other in the corporate governance structure of publicly traded real estate companies,*

H_8: *Different corporate governance mechanisms substitute each other in the corporate governance structure of publicly traded real estate companies,*

H_9: *Market valuation has an impact on the corporate governance structure of publicly traded real estate companies.*

Each of the above-listed hypotheses will be tested in the following empirical analysis.

5 Empirical Analysis of the Influence of Corporate Governance on the Market Valuation of Publicly Traded Real Estate Companies

5.1 Introduction and General Background on the Applied Methodology

The present study is intended to empirically explore the relationship between corporate governance and the market value of publicly traded real estate companies across the four major European real estate capital markets.[302] Instead of focusing on single corporate governance provisions and relying on self-constructed or professionally prepared corporate governance indices, a set of widely-accepted corporate governance mechanisms[303] is applied.[304] In this context the principal variables[305] used to measure the companies' governance strength include the following:

- board size (proxy for board structure),
- board independence (proxy for board structure),
- insider ownership (proxy for incentive structure),
- institutional ownership (proxy for concentrated ownership),
- leverage (proxy for capital structure),
- disclosure (proxy for transparency).[306]

The selection of the governance mechanisms is based on the status quo of contemporary corporate governance literature. Due to a lack of data availability and for reasons of econometric feasibility, the corporate governance mecha-

[302] For further details see chapter 5.2.

[303] Prior studies using a similar approach include Agrawal/Knoeber (1996), among others.

[304] According to Bebchuk et al. (2005), p. 5, governance quality could well be measured by focusing on a few provisions that matter instead of using a very broad index that includes numerous less important measures which only serve to introduce noise.

[305] In addition to the principal corporate governance variables, alternative measures of corporate governance of the respective corporate governance category will be applied in the course of the robustness check analysis.

[306] For a definition of the corporate governance variables see chapter 5.3.1.1.

nisms “product market competition”, “labor market competition” and “market for corporate control” are excluded from the analysis. This should not create major distortions with respect to the empirical results, since each of these mechanisms is likely to be of minor importance with respect to the corporate governance structure of publicly traded real estate companies.[307] However, country-specific corporate governance structures, such as the respective legal framework or board system, are implicitly considered by the use of different indicator variables. In addition to the corporate governance variables, an extensive set of control variables or predetermined variables[308] is used in order to further reduce a potential omitted variable bias.

The methodological approach of the empirical analysis essentially involves three steps. In a first step, firm value is regressed separately on each corporate governance mechanisms using OLS. Here, however, the problem of omitted variable bias is likely since the influence of the excluded corporate governance mechanisms is not being considered.

Hence, in a second step, firm value is regressed on all corporate governance mechanisms, once again using OLS. In this setting, it remains unclear whether the relationship between corporate governance mechanisms and firm value is causal even if they are correlated.[309] Another major drawback of OLS is that it only yields consistent and unbiased estimates if the error terms are uncorrelated with the regressors.[310] However, in the presence of endogenous explanatory variables this is not the case.[311] In order to properly address the po-

[307] As pointed out in chapter 3.3.1, p. 72, real estate asset markets are characterized by market inefficiencies that prevent market mechanisms to work properly. This implies that product market competition does not provide an effective disciplining role in the case of publicly traded real estate companies. Furthermore, it is argued in chapter 3.3.2.1, p. 75, that the labor market for managers of listed property companies is largely limited to the real estate sector. Therefore, the labor market does not appear to provide adequate governance of corporations either. Finally, as conjectured in chapters 3.3.2.1, p. 75, the market for corporate control does not work properly in the public real estate sector because of a higher tendency of managers to resist hostile takeovers which is related to limited opportunities of future employment.

[308] The definition and the rationale for the selection of the control variables can be found in chapter 5.3.1.1 and 5.3.3.3, respectively.

[309] See Black et al. (2006), p. 367.

[310] See Davidson/MacKinnon (1993), p. 209.

[311] See Davidson/MacKinnon (1993), p. 211; Eisenberg et al. (1998), p. 43.

tential problem of joint endogeneity and reverse causality, a more sophisticated estimation approach is employed in a third and final step.

Following Agrawal/Knoeber (1996), Chung/Pruitt (1996), Beiner (2005), Beiner et al. (2006) and Black et al. (2006), a simultaneous equation model will be specified, whereas each endogenous variable (firm value and the six corporate governance variables) serves as a dependent variable in one of the equations and as an explanatory variable in all other equations.

Figure 16: General Illustration of the System of Equations

Equation 1:	$FirmValue$	$= f_1(CGM_m, Control\ Variables)$
Equation 2:	$CGM_{J=1}$ *(Board Size)*	$= f_2(FirmValue, CGM_{m \neq J}, Control\ Variables)$
Equation 3:	$CGM_{J=2}$ *(Board Independence)*	$= f_3(FirmValue, CGM_{m \neq J}, Control\ Variables)$
Equation 4:	$CGM_{J=3}$ *(Insider Ownership)*	$= f_4(FirmValue, CGM_{m \neq J}, Control\ Variables)$
Equation 5:	$CGM_{J=4}$ *(Institutional Ownership)*	$= f_5(FirmValue, CGM_{m \neq J}, Control\ Variables)$
Equation 6:	$CGM_{J=5}$ *(Leverage)*	$= f_6(FirmValue, CGM_{m \neq J}, Control\ Variables)$
Equation 7:	$CGM_{J=6}$ *(Disclosure)*	$= f_7(FirmValue, CGM_{m \neq J}, Control\ Variables)$

Note: The figure presents a generalized overview of the system of equations, where *CGM* refers to the principal corporate governance mechanisms used in the empirical analysis.

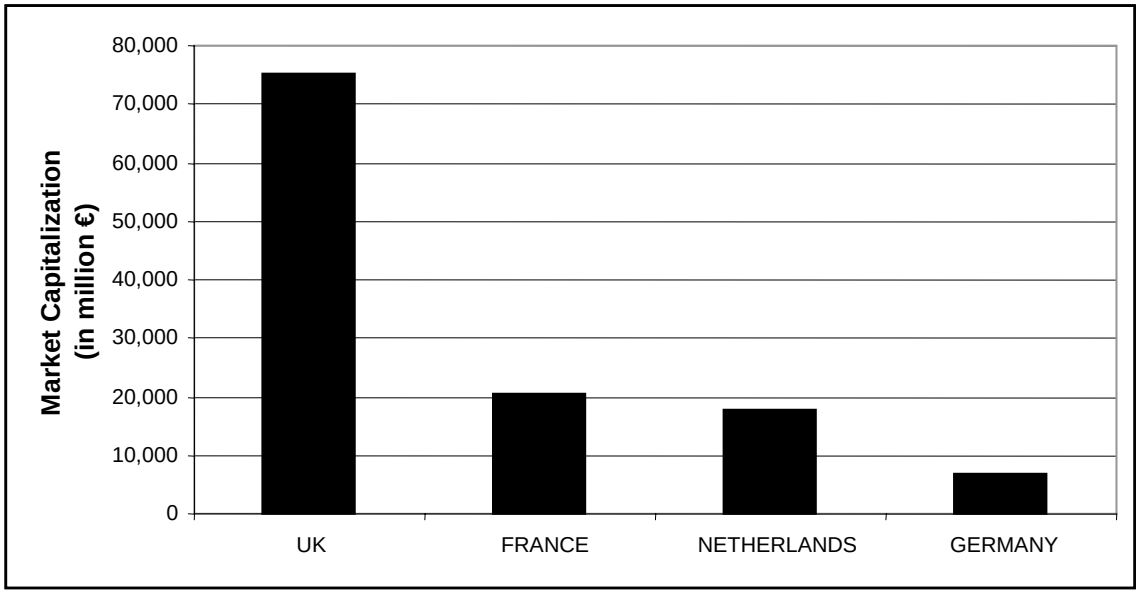
Subsequently, the system of equations, as illustrated in figure 16, is estimated simultaneously[312] using three-stage least squares (3SLS), which will be described in further detail in chapter 5.3.3.2. This approach permits an integrated analysis of the factors affecting both firm value and the different corporate governance mechanisms by explicitly incorporating the simultaneity of the process determining these variables.

[312] The equations of the system can be considered interdependent. Estimating each equation in isolation would not be sufficient to determine the actual meaning of the statistical relationships between the variables; see Hausman (1983), p. 392.

5.2 Sample Selection

The starting point in the sample selection process for the empirical study is the Datastream set of all publicly traded real estate companies in the UK, France, the Netherlands and Germany with a minimum market capitalization of USD 50 million[313] at year-end 2006. These countries represent the largest European real estate capital markets in terms of market capitalization. As an indicator for the size of the national real estate capital markets serve the respective country indices published by EPRA/NAREIT (see figure 17).

Figure 17: Market Capitalization of FTSE EPRA/NAREIT Country Indices at Year-end 2006



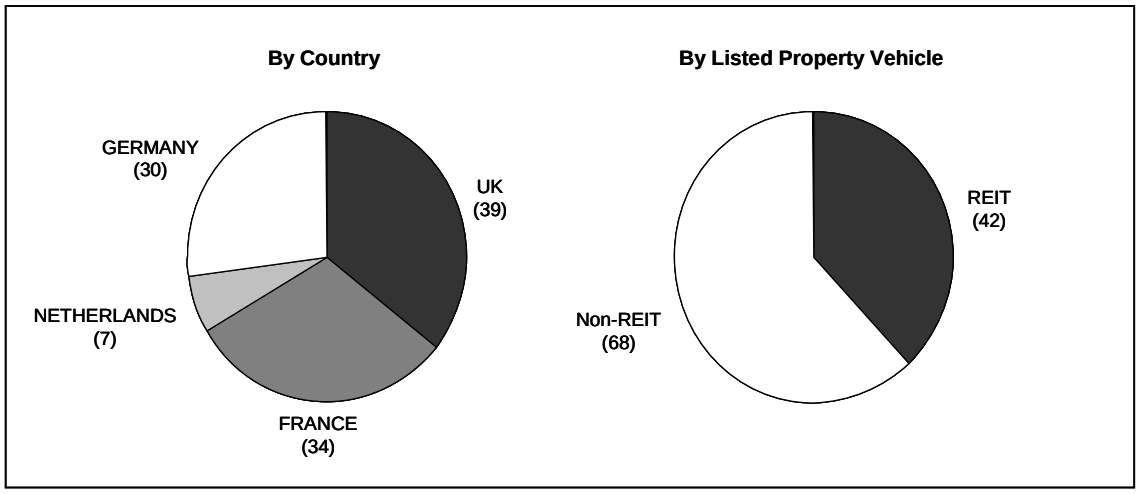
Source: EPRA Index Database (2007).

For the purpose of the study and for reasons of comparability, several adjustments need to be made to the basic Datastream sample consisting of 194 companies. At first, 38 companies with a major or principal field of activity other than the investment in and management of real estate assets, drop out reducing the sample size to 156 companies. In a further step, only those 129 companies that report in accordance with International Financial Reporting Standards

[313] The USD 50 million threshold corresponds to a common criterion of admittance to recognized real estate indices such as GPR. For reasons of comparability and data availability companies with a smaller market capitalization were excluded from the sample.

(IFRS) and that dispose of investment properties in compliance with IAS 40 remain in the sample. Ultimately, 19 companies with insufficient data have to be excluded, leaving a final sample of 110 companies[314], 39 companies from the UK, 34 companies from France, 7 companies from the Netherlands and 30 companies from Germany. Among the 110 publicly traded real estate companies entering into the empirical analysis 42 hold a REIT status. The structure of the sample is graphically illustrated in figure 18.

Figure 18: Sample Composition



Source: Own illustration.

[314] For a comprehensive list of the companies in the sample see Appendix 1.

5.3 Methodology and Empirical Results

5.3.1 Variables

5.3.1.1 Definition of Variables

The variables used to specify the structural model of the empirical analysis include firm value, the six principal corporate governance mechanisms and a large set of control variables, which will be defined individually in the following paragraphs.

In accordance with numerous corporate governance studies starting with the work of Demsetz/Lehn (1985) and Morck et al. (1988a), Tobin's Q (Q)[315] is used as the principal measure of firm value. It is generally defined as the ratio of the market value of a firm to the replacement costs of its assets. The major advantage of Tobin's Q over other measures is that it implicitly reflects the value of intangible factors, such as management competence, growth opportunities or corporate governance.[316] Well-managed companies should disclose values of Tobin's Q greater than one, indicating that the allocation and the use of corporate assets have been value-increasing.[317] As argued by Lang/Stulz (1994) and Capozza/Seguin (2000), relying on Tobin's Q rather than on performance some problems of previous studies can be avoided. Considering that Tobin's Q can be interpreted as the present value of future free cash flows divided by replacement costs, neither risk adjustment nor normalization is necessary to compare Tobin's Q across companies.[318] Following Chung/Pruitt (1994), Perfect/Wiles (1994), Yermack (1996) and Loderer/Martin (1997), among others, Tobin's Q is calculated as the ratio of market value of equity plus the book value of debt to the book value of total assets. For all companies stating investment properties at cost on their balance sheet, total assets is adjusted by

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[315] The underlying concept goes back to Brainard/Tobin (1968).

[316] See Corgel (1997), p. 3; Friday (1997), p. 28; Hermalin/Weisbach (2003), p. 12.

[317] See Loderer/Martin (1997), p. 226; Beiner et al. (2004), p. 340; Studies using Tobin's Q implicitly assume that capital markets are efficient and correctly reflect the value of companies. Even though this might not correspond to the truth, Tobin's Q might be the best performance measure available according to Börsch-Supan/Köke (2002), p. 318.

[318] See Lang/Stulz (1994), p. 1249; Capozza/Seguin (2000), p. 93.

the difference between fair value and book value of their investment properties.[319] Due to the availability of annual appraisals determining the fair value of the companies' properties and thereby delivering a better approximation of replacement costs than annually depreciated book values, publicly traded real estate companies, as opposed to companies from other industries, are likely to provide better measures of Tobin's Q.[320]

The six principal corporate governance mechanisms being analyzed in the course of the study are board size, board independence, insider ownership, institutional ownership, leverage and disclosure.

In accordance with Yermack (1996), board size (*lnBSIZE*) is measured as the natural logarithm of the number of directors on the board. The second proxy for board structure is board independence (*BIND*) which corresponds to outsider membership on the board. It is determined by the percentage of board seats held by non-officers without family relationships to the managing board as well as representatives of companies that are not involved in related party transactions. Insider ownership (*INSIDER*) is defined as the percentage of equity owned by the management of the company. Institutional ownership (*INST*), the proxy for ownership concentration, is measured as the percentage of equity held by institutions, such as pension funds, insurance companies, private equity funds or other firms that are not predominantly owned by managers or directors. Leverage (*LEV*) reflects the capital structure of a company and is defined as the ratio of book value of long-term and short-term debt to the book value of total assets.

Disclosure (*DISC*) is a corporate governance variable capturing the transparency with respect to the companies' real estate-specific disclosure practice. The reasoning behind this variable is that the special character of the real estate asset class requires publicly traded real estate companies to provide infor-

[319] Companies reporting in accordance with IFRS basically have the option to state their investment properties at cost or at fair value. Nevertheless, those companies deciding to state their investment properties at cost are required disclose the fair value of these properties in the notes of the balance sheet.

[320] For a similar line of argumentation see Capozza/Seguin (2000), p. 95; Benveniste et al. (2001), p. 634; Gentry/Mayer (2003), p. 2; Hartzell et al. (2004), p. 3.

mation that goes beyond the scope of what is provided by companies of other industries. Particularly, more detailed information on property holdings and local real estate markets, in which the company is active in, should be published in the annual report in order to provide investors and shareholders with the relevant knowledge for decision-making.

In this context, a self-constructed index of real estate-specific transparency is developed on the basis of the EPRA Best Practice Policy Recommendations.[321] Characteristics included in the original charter of recommendations that cannot be verified by external observers or that are already explicitly required by IFRS are excluded from the list of criteria relevant for the real estate transparency index. The final criteria checklist which is depicted in table 6 contains a total of 117 characteristics subdivided in the following six categories:

- General Items and Narrative,
- Accounting and Valuation Principles,
- Presentation of Accounts,
- Notes and Additional Disclosure,
- Portfolio Information,
- Net Asset Value and Earnings per Share Disclosure.

[321] See chapter 3.2.3.1.

Table 6: Criteria Checklist for the Real Estate Transparency Index

List of Criteria for the Real Estate Transparency Index

1 GENERAL ITEMS AND NARRATIVE

1.1 Status and Application of Best Practices Recommendations

1.1.1 The company includes a statement in its accounts, indicating to which extent the accounts comply with the EPRA Best Practices Recommendations.

1.1.2* The company specifies the reasons of non-compliance for the specific areas, if there is no (full) compliance.

1.2 Exemptions for Compliance with Best Practices Recommendations

1.2.1* Compliance with a recommendation would lead to substantial additional costs in gathering the information required. Or a recommendation relates to an amount or item that is of immaterial significance for the specific company.

1.3 Management Review and Narrative – General

1.3.1 In its financial statements, the company includes a management review and narrative.

1.4 Management Review and Narrative – Strategy Information

1.4.1 The company includes a "strategy segment" in its management review and narrative.

1.4.2 This segment should at least cover the following elements and subjects:

- *corporate vision / mission*
- *review of the strategy for the year under review*

  (such as: review of activities for the year under review, review of strategy statement from the prior reporting year, success in following prior reporting years' strategy, problems in year under review, any key personnel changes and impact on strategy, discussion of activities regarding principal properties)
- *current position*

  (such as position in current principal markets, what is the principal nature of the business? How will that change?, discussion of principal asset classes (locations – countries / cities; property types; activity types such as investment, trading, facilities management, etc.), discussion of service activities – current and proposed)
- *market outlook*

  (such as principal issues, how do economic and market conditions impact on business?)
- *strategy for coming reporting year(s)*

  (such as principal developments, and stage of development, general strategic direction, what are the company's principal financial objectives (e.g. maximize asset value, return on equity, earnings per share)?, what is the company looking to do with properties: trade, invest, manage, etc?, is the company expanding / selling – any specific sales planned?, how do activities tie in with financial objectives?, discussion of principal asset classes, any corporate activities planned? (e.g. mergers, acquisitions, disposals), funding objectives – types of funding, gearing levels, rating objectives, any key personnel changes proposed and likely impact on strategy, human resources strategy)
- *challenges envisaged in the coming reporting year(s).*

1.5 Management Review and Narrative – Supervisory Board and Executive Board Information

1.5.1 For each of the members of the executive board, the following information is provided:

- *name,*
- *age,*
- *sex,*
- *nationality,*
- *expiration of current term,*
- *title / role,*
- *are they on the audit / remuneration committee?,*
- *other interests / directorships,*
- *photograph.*

continued

1.5.2 For each of the members of the supervisory board and non-executive directors, the following information is provided:
- *name,*
- *age,*
- *sex,*
- *nationality,*
- *expiration of current term,*
- *title / role,*
- *are they on the audit / remuneration committee?,*
- *other interests / directorships,*
- *photograph,*
- *main employment,*
- *relevant work history, including prior directorships and any relationships with major shareholders.*

1.6 Language of Financial Reporting

1.6.1* The annual report is issued in English.

1.7 Timing of Annual and Interim Financial Reporting

1.7.1 The company publishes its annual reports within 90 days after the close of the reporting period.

1.8 Management Review and Narrative – Financial Risk Management Policies

1.8.1 The company provides a clear description of its policies for managing financial risks, including:
- *a description and sensitivity analysis of the aggregate effect of interest rate changes on a company's interest and other financial expenses,*
- *a description of the group's policy in relation to fixed vs. floating interest rate exposures,*
- *a description of the group's policy in relation to interest rate maturity dates,*
- *a description of the group's policy in relation to managing currency positions.*

1.9 Development Assets

1.9.1* The company provides the following information on sub-portfolios (as appropriate: e.g. appropriate sector, region or city) of development assets in its management narrative:
- *development costs, including costs to date, costs to completion and capitalized interest*
- *breakdown of lettable area according to regions and usage (e.g. office, residential, etc)*

1.9.2* The company provides the following information for each development project in its management narrative:
- *address,*
- *type of property (e.g. the respective proportion of office / retail / residential / storage / etc.),*
- *lettable building space,*
- *expected date of completion,*
- *percentage of ownership (and commentary on control provisions),*
- *status (e.g. planning permission / under construction / letting status, etc.).*

1.10 Investment Assets

1.10.1 The company provides the following information on sub-portfolios (as appropriate: e.g. appropriate sector, region or city) of investment assets in its management narrative or in an exhibit:
- *area in square meters,*
- *average rent per square meter,*
- *annualized net rent based on current rent roll,*
- *market rents (ERV) if fully leased at current market rents,*
- *cash flow,*
- *operating profit,*
- *fair market value,*
- *vacancy by area and rent,*
- *description of lease expiration profile,*
- *top 10 tenants by rental income,*
- *rental income breakdown by tenant business sector.*

continued

1.10.2 In its management narrative or in an exhibit the company provides a list of the major investment properties owned, containing the following information for each major property / building in the portfolio:

- *address,*
- *land area,*
- *lettable building space,*
- *type of property (e.g. the respective proportion of office, retail, residential, storage, etc.),*
- *occupancy rate,*
- *acquisition date,*
- *percentage of ownership (and commentary on control provisions),*
- *form of ownership (e.g. fee or leasehold ownership),*
- *year of construction completion / major refurbishment.*

1.11 Like-for-like Rental Growth Reporting

1.11.1 The company discloses the like-for-like rental growth at least twice a year for …

- *each significant sector of the portfolio and*
- *each geographical business segment.*

1.11.2 The company publishes growth figures …

- *on a year-on-year basis,*
- *in absolute amounts, applying fixed foreign currency exchange rates,*
- *on a percentage basis.*

1.11.3 The company describes the size, in value, of the total portfolio or investment portfolio on which the like-for-like rental growth is based.

2 ACCOUNTING AND VALUATION PRINCIPLES

2.1 Investment Property – Accounting Basis

2.1.1 The company accounts for their property investments based upon the fair value model.

2.1.2* In case the company does not follow the above recommendation and instead accounts for their investment properties based upon the depreciated cost model, the rationale for this is clearly explained in the notes to the accounts.

2.2 Investment Property – Valuation Standard

2.2.1 Valuation: The fair value (market value) of investment property held by the company is assessed in accordance with International Valuation Standards (IVS), as set out by the International Valuation Standards Committee (IVSC).

2.2.2 Timing: The company discloses if portfolio valuations are performed …

- *per reporting date.*
- *at least once a year.*

2.2.3 Reporting: The company reports as a minimum …

- *the full-ungeared portfolio value and*
- *a note of confirming compliance with IVS*
- *(and any departures or additional assumptions employed)*.*

2.2.4 Disclosure: The company discloses …

- *the valuation methodology applied (e.g. open market value existing use, net of purchasers costs), and any changes in the valuation methodology and*
- *the assumptions applied in valuing the investments property (on an average basis for each sector of the portfolio; for instance, when a DCF approach is used, the average growth rates, costs, discount rates and exit yields should be quoted).*

2.2.5 Balance Sheet:

- *The valuation of assets for the entire portfolio, and sub-portfolios, are directly and transparently tied to the company's balance sheet.*
- *A reconciliation of the movements in the value of investment properties from the prior year are provided in the notes to the accounts.*

continued

2.3 Borrowing Costs

2.3.1* If the company is undertaking (re)development projects or refurbishments it capitalize borrowing costs during the development period.

2.3.2* The company provides a description of the group's policy regarding the capitalization of interest including …

- *interest rate assumptions and*
- *the criteria for capitalization.*

3 PRESENTATION OF ACCOUNTS

3.1 Profit and Loss Accounts

3.1.1 The company presents its profit and loss accounts in a format, which resembles the one presented by EPRA (see EPRA (2006), p. 17).

3.2 Balance Sheet

3.2.1 The company presents its balance sheet according to the structure and elements presented by EPRA (see EPRA (2006), p. 19).

3.3 Cash Flow Statement

3.3.1 The company presents its cash flow statement according to the structure presented by EPRA (see EPRA (2006), p. 21).

4 NOTES AND ADDITIONAL DISCLOSURE

4.1 Executive and Supervisory Board Compensation

4.1.1 The company discloses the following information on their executive and supervisory board compensation, for each member individually:

- *remuneration; emoluments including taxable expenses (basic salary, bonus, fees (description), benefits, total)*
- *contract duration*
- *pensions and other retirement benefits*
- *share options (number, date of grant, exercise price, exercise period, conditions for exercise)*
- *holdings of ordinary shares (including related individuals, where relevant)*
- *for supervisory board members: the nature and amount of compensation payments (e.g. aggregate payments to directors or past directors for loss of office)*

4.2 Investment Property – Appraiser Fee Basis

4.2.1* The company discloses:

- *the basis for appraiser fees (fee based upon hours spent, as a result of appraised value or fixed amount);*
- *the amount of annual non-valuation fees that have been paid to the appraiser(s);*
- *whether the fee for each appraiser accounts for more than 10% of that appraiser's turnover.*

4.3 Financing and Debt Position

4.3.1 The company provides full narrative explanation of …

- *the components of the net finance charge in their accounts,*
- *the market valuations of their hedging instruments and / or debt.*

4.3.2 The company provides a clear description of its debt profile, at least including information on …

- *the proportion of debt that is secured by specific assets versus unsecured,*
- *the weighted average cost of debt.*

4.4 Historical Financial Results

4.4.1 In its annual accounts the company includes key financial data on a consolidated basis for each of the last five financial years.

4.5 Definitions

4.5.1 The company includes a glossary of terms used in its annual accounts.

continued

5 PORTFOLIO INFORMATION

5.1 Property Performance Reporting

5.1.1 The company provides additional information and disclosure on rental data of investment properties (for details see EPRA (2006), p. 30) …
- *disaggregated by characteristics*
  (incl. gross rental income, net rental income, lettable area, passing rent, estimated rental value, vacancy)
- *disaggregated by segment.*

5.1.2 The company provides additional information and disclosure on valuation data of investment properties (for details see EPRA (2006), p. 31) …
- *disaggregated by characteristics*
  (incl. property valuation, valuation movement in the year, gross / net initial yield, reversionary yield)
- *disaggregated by segment.*

5.1.3 The company provides additional information and disclosure on like-for-like net rental income of investment properties (for details see EPRA (2006), p. 32) …
- *disaggregated by characteristics*
  (incl. properties owned throughout the two years, acquisitions, disposals, developments and total net rental income for the current year and the last year respectively)
- *disaggregated by segment.*

5.1.4 The company provides additional information and disclosure on development and redevelopment properties (for details see EPRA (2006), p. 33) …
- *disaggregated by characteristics*
  (incl. cost to date, costs to complete, future interest to be capitalized, forecast total cost, forecast completion date, lettable area, % let, notional current estimated rental value on completion)
- *disaggregated by segment.*

5.1.5 The company provides additional information and disclosure on lease data of investment properties (for details see EPRA (2006), p. 34) …
- *disaggregated by characteristics*
  (incl. lease expiry data, lease review data)
- *disaggregated by segment.*

6 NET ASSET VALUE AND EARNINGS PER SHARE

6.1 Earnings per Share (EPS)

6.1.1 The company adjusts the EPS figure per IFRS income statement according to the recommendations provided by EPRA (see EPRA (2006), p. 35).

6.2 Net Asset Value per Share (NAV)

6.2.1 The company adjusts the NAV per share figure per IFRS income statement according to the recommendations provided by EPRA (see EPRA (2006), p. 37).

6.3 Tripple Net Asset Value (NNNAV)

6.3.1 The company further adjusts the adjusted NAV per share figure according to the recommendations provided by EPRA (see EPRA (2006), p. 39).

* indicates criteria that cannot be applied to all companies and are thus not being considered in the determination of the real estate-specific transparency score of the respective companies.

Source: Own illustration following EPRA (2006).

Some of the included recommendations are not applicable to all companies. Therefore, a relative scoring system is selected. If a particular criterion is not relevant for a company it is not considered, reducing the total absolute score that can be achieved by this company accordingly. The final score of transparency is expressed in percent and is calculated by the ratio of points actually achieved to the total or maximum achievable points. The scoring scheme is basically straight-forward. Points are allocated to the single criteria depending on the extent of compliance. In case of full compliance, partial compliance and non-compliance, 1, 0.5 and 0 points were allocated respectively.

Apart from Tobin's Q, as the measure for firm value, and the different corporate governance mechanisms, diverse control variables are added to the structural model of the study. These are defined as follows.

Firm size (*lnASSETS*) is approximated by the natural logarithm of the book value of total assets.[322] This has been common practice in prior corporate governance research, such as Shin/Stulz (2000), Gompers et al. (2003), Black et al. (2006) and Han (2006). Following Shin/Stulz (2000), Drobetz et al. (2004) and Black et al. (2006), among others, firm age (*lnYEARS*) corresponds to the number of years the company has been listed on the stock exchange. As an approximation for the listing date the Datastream item "base date" is employed.[323] Consistent with Yermack (1996), Daines (2001) and Larcker et al. (2004) operating profitability is represented by the return on assets of the current period (*ROA(t)*) and the return on assets of the previous period (*ROA(t-1)*). Return on assets is measured as net income divided by total assets. Revenue growth (*GROWTH*) is used as an additional measure for operating performance and refers to the average annual growth of revenues over the previous 2 years. *GROWTH* is winsorized at the 1st and 99th percentile to correct for outliers. As a firm-specific risk measure, volatility (*VOLA*) is included. It is equivalent to the standard deviation of stock prices over the previous 12 months divided by the

[322] For all companies reporting their investment properties at cost, total assets are adjusted by the respective fair values, stated in the notes of the balance sheet. This is valid for all variables that are determined by total assets.

[323] For a similar proceeding see Shin/Stulz (2000) and Doyle et al. (2007).

average mean price and multiplied by 40.[324] Share turnover is denoted liquidity (*LIQUID*) and is calculated as common shares traded during fiscal year 2006/2007 divided by the company's common shares outstanding. Another three control variables are the number of officers (*NOFFICER*), the number of outside blockholdings (*NOBLOCK*), and the number of years as CEO (*TENURE*).

In addition, several indicator variables are selected to account for potential effects on the endogenous variables. One of them is *CEOPRES* which is equal to one if the former or current CEO of the company is the president of the board of directors, zero otherwise. Another indicator variable is *FOUNDER*. It is equal to one if the CEO is the founder of the company, and zero if not. *CEOPERF* is an indicator variable reflecting the remuneration structure of CEOs. It is equal to one if the CEO receives a performance-based remuneration, zero otherwise. *DIVERS* is expected to capture whether the real estate portfolio of a company is diversified in terms of property type. It takes the value one, if the company's property portfolio displays different property categories (such as retail, office or logistics), zero elsewise. Whether the company is managed internally or externally is captured by *INTERN*. This variable is one, if the company is run by an internal management, otherwise it is zero. *REIT* is an indicator variable equal to one, if the company has a REIT-structure, and equal to zero for a regular publicly traded real estate company. An indicator variable for board system is *BSYSTEM*. It is equal to one for one-tier boards and equal to zero for two-tier boards.[325] Finally, country indicator variables are used to reflect any country-specific peculiarities. They are equal to one if the company's headquarter is located in the respective country, zero otherwise.

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[324] This calculation of volatility corresponds to one of Datastream item "vola".

[325] In the countries subject to this study two different board systems exist which need to be distinguished: one-tier and two-tier boards. In countries with one-tier board systems, such as the UK, companies are governed by a single board where the functions of management and management control are combined in a single body. Hence, one-tier boards consist of executive and non-executive directors. On the contrary, in countries with two-tier board systems, such as Germany and the Netherlands, companies are governed by a management board and a supervisory board, two separate bodies differentiating between management and control function. In some countries, such as France, both board structures are possible. For a more detailed review of the two board systems see Jungmann (2006).

For an overview of all variables of the model and the variable-specific data sources see tables 7 and 8. The data for all variables has been collected at the corresponding fiscal year end 2006/2007[326] for each company of the sample. The main data sources were the Datastream and Worldscope databases as well as the respective annual reports and webpages of the companies.

Table 7: Definition of Endogenous Variables

Endogenous Variables (Measure of Firm Value and Corporate Governance Mechanisms)		
Variable	**Definition**	**Data Source**
Tobin's Q (Q)	Ratio of market value of equity plus the book value of debt to the book value of total assets	Datastream: Market Value (MV); Worldscope: Total Assets (WC02999), Total Debt (WC03255); Annual Report
Board Size (lnBSIZE)	Natural logarithm of the number of directors on the board	Annual Report
Board Independence (BIND)	Percentage of board seats held by non-officers without family relationship to the managing board and representatives of companies that are not involved in related party transactions	Annual Report
Insider Ownership (INSIDER)	Percentage of equity held by the executive management of the company	Worldscope: Major Shareholders (WC18370); Annual Report
Institutional Ownership (INST)	Percentage of equity held by institutions (legal entities) that are not predominantly owned by insiders	Worldscope: Major Shareholders (WC18370); Annual Report
Leverage (LEV)	Ratio of book value of debt to total assets	Worldscope: Total Assets (WC02999), Total Debt (WC03255); Annual Report
Disclosure (DISC)	Self-constructed transparency index based on the EPRA Best Practice Policy Recommendations providing a relative score, expressed in percent, for transparency with respect to the companies' real estate specific disclosure; while a lower score indicates a less transparent disclosure a higher score indicates a more transparent disclosure	Annual Report

Note: The data of the variables described above has been collected at the companies' respective fiscal year end 2006/2007.

[326] The different fiscal year end dates range from September 30, 2006 to June 30, 2007.

Table 8: Definition of Exogenous Variables

Exogenous Variables (Control Variables)		
Variable	**Definition**	**Data Source**
Firm Size (lnASSETS)	Natural logarithm of book value of total assets	Worldscope: Total Assets (WC02999); Annual Report
Firm Age (lnYEARS)	Natural logarithm of the number of years the company has been listed on the stock exchange	Datastream : Base Date (BDATE)
Return on Assets of previous period (ROA (t-1))	Net income divided by total assets in period t-1	Worldscope: ROA (WC08326); Annual Report
Return on Assets of current period (ROA (t))	Net income divided by total assets in period t	Worldscope: ROA (WC08326); Annual Report
Revenue Growth (GROWTH)	Average annual growth of revenues over the last 2 years; the variable is winsorized at the 1st and 99th percentile	Worldscope: Net Sales or Revenues (WC01001); Annual Report
Volatility (VOLA)	Standard deviation of stock returns estimated from daily stock prices over the previous 12 months divided by the mean price and multiplied by 40	Datastream: Price (P)
Liquidity (LIQUID)	Share turnover, measured by common shares traded during fiscal year 2006/07 divided by common shares outstanding	Datastream: Turnover by Volume (VO); Worldscope: Common Shares Outstanding (WC05301); Annual Report
Number of Officers (NOFFICER)	Number of officers	Annual Report
Number of Outside Blockholders (NOBLOCK)	Number of outside blockholders	Worldscope: Major Shareholders (WC18370); Annual Report
Years as CEO (TENURE)	Number of years as CEO	Annual Report; Company Webpage
CEO or former CEO as President of the Board (CEOPRES)	Indicator variable equal to 1 if the current or former CEO is the president of the board, 0 otherwise	Annual Report; Company Webpage
Founding CEO (FOUNDER)	Indicator variable equal to 1 if the CEO is the founder of the company, 0 otherwise	Annual Report; Company Webpage
CEO Performance-based Remuneration (CEOPERF)	Indicator variable equal to 1 if the CEO receives an performance-based remuneration, 0 otherwise	Annual Report
Diversification (DIVERS)	Indicator variable equal to 1 if the company has a diversified real estate portfolio (office, retail, logistics, etc.), 0 otherwise	Annual Report; Company Webpage
Internal Management (INTERN)	Indicator variable equal to 1 if the company is internally managed, 0 otherwise	Annual Report; Company Webpage
REIT Structure (REIT)	Indicator variable equal to 1 if the company has a REIT structure, 0 otherwise	Annual Report; Company Webpage
Board System (BSYSTEM)	Indicator variable equal to 1 in case of a one-tier board system, 0 otherwise	Annual Report
Country (COUNTRY)	Indicator variable equal to 1 if the company's headquarter is located in the respective country, 0 otherwise	Annual Report; Company Webpage

Note: The data of the variables described above has been collected at the companies' respective fiscal year end 2006/2007.

5.3.1.2 Descriptive Statistics

After having defined the relevant variables of the empirical study, it is necessary to take a closer look at their general statistical properties. The descriptive or summary statistics of all variables for the aggregate sample of 110 exchange-traded real estate companies from the UK, France, the Netherlands and Germany are presented in table 9.

Table 9: Descriptive Statistics of All Variables for the Total Sample

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
Q	1.111	0.994	0.462	7.101	0.666
BSIZE	7.127	6.000	3.000	18.000	3.376
BIND	0.623	0.577	0.000	1.000	0.290
INSIDER	0.109	0.001	0.000	0.990	0.234
INST	0.198	0.112	0.000	0.983	0.225
LEV	0.406	0.382	0.007	0.876	0.196
DISC	0.450	0.435	0.172	0.799	0.154
ASSETS	2,568,907,116	991,880,500	27,261,000	27,910,540,000	4,736,005,445
YEARS	16.191	17.000	1.000	43.000	12.542
ROA (t-1)	0.074	0.065	-0.113	0.419	0.071
ROA (t)	0.103	0.095	-1.368	0.513	0.169
GROWTH	1.944	0.118	-0.936	58.178	8.140
VOLA	5.123	3.767	0.341	70.603	7.028
LIQUID	0.381	0.166	0.000	1.944	0.475
NOFFICER	3.255	3.000	1.000	11.000	1.937
NOBLOCK	1.382	1.000	0.000	8.000	1.603
TENURE	5.445	3.000	1.000	30.000	6.328
CEOPRES	0.318	0.000	0.000	1.000	0.468
FOUNDER	0.127	0.000	0.000	1.000	0.335
CEOPERF	0.764	1.000	0.000	1.000	0.427
DIVERS	0.664	1.000	0.000	1.000	0.475
INTERN	0.945	1.000	0.000	1.000	0.228
REIT	0.382	0.000	0.000	1.000	0.488
BSYSTEM	0.555	1.000	0.000	1.000	0.499
COUNTRY_UK	0.355	0.000	0.000	1.000	0.481
COUNTRY_France	0.309	0.000	0.000	1.000	0.464
COUNTRY_Netherlands	0.064	0.000	0.000	1.000	0.245
COUNTRY_Germany	0.273	0.000	0.000	1.000	0.447

Note: The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07.

The arithmetic mean of Tobin's Q equals 1.11 indicating that listed real estate companies from all four countries are on average value increasing entities generating returns above the opportunity cost of capital. Board size ranges between 3 and 18 members and is on average 7.13. This corresponds to the optimal board size of 7 to 9 members recommended by Lipton/Lorsch (1992) and Jensen (1993). The fraction of independent members on the board for the overall sample is 62.3%. Clearly, board size as well as board independence are likely to be influenced by the prevalent board system. This intuition will be veri-

fied later in this chapter. The percentage of shares owned by managers is on average 10.9% with a median of 0.1%. Taking into account the very large maximum value of 99% these values suggest that there are very few companies in the sample where managers hold a very high proportion of the company's shares. Institutional ownership, as defined in table 7, ranges from 0 to 98.3% and is on average 19.8%. The capital structure of the companies reveal debt or leverage ratios ranging from 0.7% to 87.6% with a mean of 40.6% and a median of 38.2%. Compared to other non-real estate samples, e.g. Rajan/Zingales (1995) with average debt ratios ranging from 60% to 70%, these results are relatively low. The score of transparency regarding real estate-specific disclosure practices vary from 17.2% to 79.9% with an average score of 45%.

The descriptive statistics of the exogenous variables shall be confined to a selection of noteworthy results. Total assets of the companies in the overall sample range from a minimum value of € 27 million to a maximum value of € 27,911 million. On average, total assets of the companies is € 2,568 million. With 55.5% the majority of the companies from the total sample have a one-tier board structure. Approximately 95% of the companies are internally managed, 38.2% have a REIT-structure and 66.4% hold a diversified real estate portfolio with respect to property type. Furthermore, in 12.7% of the companies the CEO is the founder of the company and in 31.8% of the companies the current or former CEO is president of the board.

In order to gain a more profound insight into country-specific as well as REIT- and Non-REIT-specific characteristics, the descriptive statistics section is extended to several subsamples. The summary statistics of Tobin's Q and the principal corporate governance mechanisms for the subsamples are depicted in table 10 and 11.

Table 10: Descriptive Statistics of Tobin's Q and Corporate Governance Mechanisms for Different Country Subsamples

Variable	Q	BSIZE	BIND	INSIDER	INST	LEV	DISC
UK							
Mean	1.001	7.821	0.535	0.074	0.311	0.329	0.501
Median	0.965	8.000	0.500	0.006	0.266	0.297	0.500
Minimum	0.750	3.000	0.286	0.000	0.000	0.062	0.224
Maximum	1.707	15.000	1.000	0.513	0.983	0.854	0.788
Std. Dev.	0.177	2.694	0.174	0.133	0.222	0.166	0.135
Sample Size	39	39	39	39	39	39	39
France							
Mean	1.011	8.912	0.409	0.100	0.130	0.489	0.426
Median	0.992	9.000	0.394	0.000	0.052	0.494	0.436
Minimum	0.462	3.000	0.000	0.000	0.000	0.021	0.172
Maximum	1.615	18.000	0.800	0.990	0.936	0.876	0.649
Std. Dev.	0.253	3.613	0.235	0.250	0.215	0.208	0.134
Sample Size	34	34	34	34	34	34	34
Netherlands							
Mean	1.044	4.714	0.923	0.011	0.211	0.354	0.725
Median	1.065	4.000	1.000	0.000	0.280	0.352	0.718
Minimum	0.932	4.000	0.714	0.000	0.000	0.204	0.645
Maximum	1.149	7.000	1.000	0.054	0.366	0.491	0.799
Std. Dev.	0.087	1.113	0.131	0.021	0.164	0.091	0.055
Sample Size	7	7	7	7	7	7	7
Germany							
Mean	1.383	4.767	0.909	0.186	0.124	0.422	0.347
Median	1.100	3.500	1.000	0.000	0.009	0.455	0.340
Minimum	0.504	3.000	0.250	0.000	0.000	0.007	0.173
Maximum	7.101	15.000	1.000	0.970	0.766	0.825	0.609
Std. Dev.	1.202	2.582	0.199	0.319	0.199	0.203	0.101
Sample Size	30	30	30	30	30	30	30

Note: The variables are defined in table 7. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07.

Comparing the general statistical properties of Tobin's Q across different country samples, it turns out that the German sample has the highest mean with a value of 1.38, followed by the Netherlands with a mean of 1.04, France with a mean of 1.01 and the UK with a mean value of 1.00. The comparably high value for the German sample is linked to some very high valuations of only a few companies. This can be concluded from the large maximum value of 7.10 and the relatively low median value of 1.10. The extraordinarily high valuations

of German publicly traded real estate companies may be partially explained by a positive sentiment of investors caused by the expected upside potential of real estate companies prior to the introduction of a REIT-regime in Germany.

As predicted before, board size and board independence seem to be influenced by the respective board system. In the UK (and to some extent in France) where the one-tier board is the predominant board system, board size is almost twice as high as in Germany and the Netherlands, where only two-tier board structures can be found. In addition, companies with two-tier boards from Germany and the Netherlands reflect a much higher percentage of board independence of roughly 90% which is close to twice as high as in the UK.

The highest average fraction of insider ownership, as measured by the shareholdings of corporate management, can be observed for the German sample and is around 18.6%. The mean values for the UK, France and the Netherlands are 7.4%, 10.0% and 1.1%, respectively. The highest levels of institutional ownership can be found in the UK. Here, the average percentage of shares owned by institutions equals 31.1%, followed by the Netherlands with 21.1%, France with 13.0% and Germany with 12.4%.

Listed property companies from France and Germany have the highest average debt ratios with values of 48.9% and 42.2%. Leverage ratios of UK and Dutch companies are on average 32.9% and 35.4%. With respect to real estate-specific disclosure, companies from the Netherlands reveal the highest transparency with a mean score of 72.5%. This exceptionally high score can certainly be traced back to the existence of only a few but very large and mature real estate companies in the Netherlands. The second highest scores are on average generated by UK companies with a value of 50.1%, followed by French companies with a value of 42.6%. With an arithmetic mean of 34.7% German publicly traded real estate companies perform worst in terms of transparent real estate-specific disclosure.

Table 11: Descriptive Statistics of Tobin's Q and Corporate Governance Mechanisms for REIT and Non-REIT Subsamples

Variable	Q	BSIZE	BIND	INSIDER	INST	LEV	DISC
REITs							
Mean	1.009	8.405	0.522	0.071	0.174	0.441	0.534
Median	0.997	8.000	0.458	0.000	0.097	0.443	0.531
Minimum	0.477	3.000	0.000	0.000	0.000	0.021	0.217
Maximum	1.470	18.000	1.000	0.990	0.936	0.876	0.799
Std. Dev.	0.171	3.493	0.260	0.203	0.201	0.190	0.151
Sample Size	42	42	42	42	42	42	42
Non-REITs							
Mean	1.174	6.338	0.685	0.132	0.212	0.384	0.398
Median	0.991	6.000	0.667	0.002	0.131	0.367	0.391
Minimum	0.462	3.000	0.000	0.000	0.000	0.007	0.172
Maximum	7.101	15.000	1.000	0.970	0.983	0.854	0.788
Std. Dev.	0.832	3.069	0.292	0.250	0.239	0.198	0.131
Sample Size	68	68	68	68	68	68	68

Note: The variables are defined in table 7. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07.

A glance at REITs versus Non-REITs shows that REITs on average have lower Tobin's Q ratios (1.01) than Non-REITs (1.17). Considering that the median value of Tobin's Q is slightly larger for the REIT-sample (0.997) than in the Non-REIT-sample (0.991) one has to be careful with statements inferring that Non-REITs are generally valued higher by the capital market. As table 11 indicates, REITs have on average larger and less independent boards than listed real estate companies without a REIT-status. Furthermore, the mean of insider ownership for the REIT-sample of 7.1% is almost half of the value for the Non-REIT-sample of 13.2%. Surprisingly, REITs exhibit lower levels of institutional ownership than regular publicly traded real estate companies. This result may to a certain extent be explained by the fact that listed property companies in the UK, representing a capital market characterized by high levels of institutional ownership, have not converted to a REIT at the time the data was collected for the study. Moreover, REITs as opposed to Non-REITs appear to have slightly

higher leverage ratios[327] as well as much higher scores of transparency with respect to real estate-specific disclosure.

Table 12: Pearson Correlation Matrix of Endogenous Variables

Variable	Q	lnBSIZE	BIND	INSIDER	INST	LEV	DISC
Q	1.000 (--/--)						
lnBSIZE	**-0.230**** (-2.460)	1.000 (--/--)					
BIND	**0.207**** (2.200)	**-0.369*** (-4.122)	1.000 (--/--)				
INSIDER	0.058 (0.609)	**-0.304*** (-3.314)	-0.019 (-0.193)	1.000 (--/--)			
INST	-0.058 (-0.607)	-0.019 (-0.193)	0.025 (0.257)	**-0.261***** (2.809)	1.000 (--/--)		
LEV	-0.003 (-0.034)	0.089 (0.926)	-0.038 (-0.397)	0.124 (1.294)	-0.124 (-1.294)	1.000 (--/--)	
DISC	-0.133 (-1.397)	**0.465***** (5.454)	-0.097 (-1.009)	**-0.274***** (-2.962)	0.076 (0.797)	-0.114 (-1.196)	1.000 (--/--)

Note: The table shows the correlation coefficients between the endogenous variables. The respective t-values are presented in parentheses below the coefficients. The variables are defined in table 7. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. *, ** and *** indicates that the respective correlation coefficient is statistically significant at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

Table 12 presents the Pearson correlation coefficients between Tobin's Q and the principal corporate governance mechanisms.[328] The results depicted in column 1 (Q) show two statistically significant correlations at the 5% level that at the same time represent the highest absolute values within the same column. These include the correlation between *lnBSIZE* and *Q,* on the one hand, and the correlation between *BIND* and *Q,* on the other hand. *LnBSIZE* is significantly negative whereas *BIND* is significantly positive correlated with *Q*. While *INSIDER* and *Q* are positively correlated, *INST*, *LEV* and *DISC* are negatively correlated with *Q*. However, it has to be pointed out that neither of these correlations is statistically significant.

[327] This finding may possibly be explained by country-specific peculiarities.

[328] A Pearson correlation matrix of the continuous exogenous variables can be found in Appendix 2.

The significantly positive correlation between *DISC* and *lnBSIZE* and the highly significant negative correlation between *INSIDER* and *INST* as well as between *INSIDER* and *DISC* might be an indication for possible substitution effects among the governance mechanisms. This notion will be further investigated at a later point of the study.

5.3.2 Ordinary Least Squares (OLS) Analysis

5.3.2.1 Specification of the OLS Regression Model

The dependent variable of the OLS regression equation, presented below, is Tobin's Q (*Q*) which serves as an approximation for the market value of the firm.

$$\begin{aligned} Q_t = {} & \beta_0 + \sum_{m=1}^{6} \beta_m CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 \ln YEARS_t + \beta_9 ROA(t-1)_t \\ & + \beta_{10} ROA(t)_t + \beta_{11} VOLA_t + \beta_{12} DIVERS_t + \beta_{13} REIT_t + \beta_{14} BSYSTEM_t \\ & + \sum_{n=1}^{4} \beta_{14+n} COUNTRY_{tn} + u_t \end{aligned} \qquad (5.1)$$

In addition to the six corporate governance mechanisms, several control variables with a potential impact on market valuation have been selected to serve as explanatory variables on the right-hand side of the equation. In literature, it is frequently argued that firm value depends positively on future investment opportunities or growth opportunities.[329] Following Shin/Stulz (2000), Gompers et al. (2003), Anderson/Reeb (2003), Drobetz et al. (2004) and Black et al. (2006), among others, firm size (*lnASSETS*) and firm age or rather the number of years listed on the stock exchange (*lnYEARS*) are used as proxies for such growth opportunities. In this context, it is expected that larger and older firms have less growth opportunities implying a negative relationship between *lnASSETS* and *Q* as well as between *lnYEARS* and *Q*. Another important factor influencing firm value is a company's current and past profitability.[330] In line with Yermack (1996) and Daines (2001), return on assets of the previous year (*ROA(t-1)*) and return on assets of the current year (*ROA(t)*) are included as measures of operating profitability. The relationship between *ROA* and *Q* is generally expected to be positive. Furthermore, it is anticipated that firm risk

[329] See Myers (1977), p. 148f, and Smith/Watts (1992), p. 267, among others.

[330] See Yermack (1996), p. 192; Daines (2001), p. 532.

has an effect on firm value. As a proxy for firm risk the standard deviation of stock returns (*VOLA*) is used. Further control variables of the first equation include diversification of the property portfolio with regard to property type (*DIVERS*) and REIT structure (*REIT*). Prior research by Capozza/Seguin (1999) and Cronqvist et al. (2001) has shown that unfocused publicly traded real estate companies (REITs), particularly those diversified by property type, are intransparent, very expensive to manage and ultimately less successful.[331] Moreover, it can be argued that there is no need for publicly traded real estate companies to hold a diversified portfolio since investors can diversify their portfolios on their own.[332] Therefore, a negative relation is anticipated between *DIVERS* and *Q*. In contrast to the corporate structure of regular publicly traded companies, the REIT structure provides a set of characteristics with a special appeal to investors. These characteristics include among others tax efficiency and transparency due to the elimination of corporate level taxes and greater investor security due to increased regulation. Consequently, *REIT* is assumed to be positively related to *Q*. Finally, the board system (*BSYSTEM*) and country (*COUNTRY*) indicator variables are added to the equation in order to control for board system and country effects.

5.3.2.2 Results of OLS Estimation

Based on equation 5.1, this chapter provides the results of various multivariate OLS regressions of Tobin's Q on different corporate governance mechanisms and control variables. The OLS regression models are depicted in table 13. All of them treat the corporate governance mechanisms as exogenous[333] and account for the previously defined set of control variables.

The OLS analysis basically follows two steps. At first, the influence of each corporate governance mechanism on Tobin's Q is analyzed by six separate

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[331] According to Cronqvist et al. (2001), p. 91, gains from specialization with respect to particular property types arise from the specific knowledge of the management team on the individual properties, how to value them and about potential buyers and sellers in the market.

[332] See Cronqvist et al. (2001), p. 90; Chan et al. (2003), p. 113.

[333] As previously pointed out this assumption is disputable and will be repealed in chapter 5.3.3.

regression models (see model (1)-(6) of table 13). The results of these regressions will indicate whether there is a significant influence of the single corporate governance mechanisms on firm value after controlling for other value-relevant variables. These regression results need to be handled with caution since they ignore other corporate governance mechanisms that might be relevant for a correct specification of the model (problem of omitted variable bias). Therefore, in a second step all corporate governance mechanisms are included in the regression model (see model (7) of table 13).

Table 13: Coefficient Estimates from OLS Regressions of Tobin's Q on different Corporate Governance Mechanisms and Control Variables

	Dependent Variable = Tobin's Q						
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
lnBSIZE	-0.111 (-0.722)						**-0.232*** (-1.704)
BIND		0.239 (1.227)					**0.406*** (1.982)
INSIDER			0.291 (1.281)				**0.384*** (1.755)
INST				0.251 (1.420)			**0.379**** (2.376)
LEV					0.152 (0.708)		0.194 (1.032)
DISC						**1.134***** (2.841)	**1.726***** (4.177)
lnASSETS	-0.005 (-0.122)	-0.026 (-0.828)	-0.010 (-0.329)	-0.022 (-0.683)	-0.027 (-0.889)	**-0.086***** (-2.557)	-0.044 (-1.256)
lnYEARS	**-0.118**** (-2.445)	**-0.114**** (-2.350)	**-0.122**** (-2.565)	**-0.105**** (-2.151)	**-0.113**** (-2.344)	**-0.096**** (-2.028)	**-0.105**** (-2.408)
ROA (t-1)	**2.620***** (3.325)	**2.546***** (3.220)	**2.542***** (3.287)	**2.644***** (3.434)	**2.700***** (3.374)	**2.549***** (3.159)	**2.724***** (3.777)
ROA (t)	**-3.396***** (-4.526)	**-3.377***** (-4.507)	**-3.454***** (-4.640)	**-3.424***** (-4.578)	**-3.387***** (-4.484)	**-3.413***** (-4.461)	**-3.667***** (-5.193)
VOLA	**0.005*** (1.822)	**0.006**** (2.168)	**0.007***** (2.688)	**0.005*** (1.801)	**0.005*** (1.820)	**0.005*** (1.806)	**0.008**** (2.521)
DIVERS	-0.130 (-1.448)	-0.134 (-1.467)	-0.115 (-1.370)	-0.142 (-1.543)	-0.135 (-1.475)	**-0.164*** (-1.836)	**-0.152*** (-1.958)
REIT	**0.374***** (2.987)	**0.373***** (3.082)	**0.375***** (3.186)	**0.350***** (3.087)	**0.349***** (3.002)	**0.215*** (1.795)	**0.215*** (1.744)
Constant	**1.901***** (2.996)	**1.924***** (3.161)	**1.779***** (3.110)	**2.027***** (3.211)	**2.109***** (3.587)	**2.924***** (4.645)	**1.660***** (2.942)
BSYSTEM	+	+	-	-	-	-	+
COUNTRY	+	+	+	+	+	+	+
F-Statistic (p-value)	**15.800***** (0.000)	**15.959***** (0.000)	**17.795***** (0.000)	**17.588***** (0.000)	**17.269***** (0.000)	**18.838***** (0.000)	**14.450***** (0.000)
Adjusted R^2	0.620	0.622	0.629	0.626	0.621	0.643	0.677

Note: The table shows the coefficient estimates from OLS regressions of Tobin's Q on different corporate governance mechanisms and control variables. The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. All t-values, reported in parentheses below the respective coefficients, are calculated on the basis of White heteroskedasticity-consistent standard errors. *, ** and *** respectively indicate significance at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

Five of the seven control variables, that is *lnYEARS*, *ROA(t-1)*, *ROA(t)*, *VOLA* and *REIT*, are statistically significant at the 10%, 5% or 1% level in all regressions, indicating that they are actually value-relevant. As predicted, Tobin's Q is higher for younger firms (*lnYEARS*) with larger growth opportunities and supports the findings of Chung/Pruitt (1996), Anderson/Reeb (2003) and Black et al. (2006), among others. In line with Larcker et al. (2004), operating profitability of the previous period (*ROA(t-1)*) is significantly positive correlated with Tobin's Q, whereas the operating profitability of the current period (*ROA(t)*) is significantly negative correlated with Tobin's Q. In addition, more risky companies, as measured by *VOLA*, are valued higher by the capital market which corresponds to the empirical results of Beiner et al. (2006). Furthermore, companies with a REIT structure (*REIT*) exhibit, as expected, higher market valuations. Firm size, as measured by *lnASSETS,* and diversification, denoted as *DIVERS*, remain statistically insignificant except for regression models (6) and (6)-(7), respectively. Nevertheless, both variables always exhibit a negative coefficient, as predicted.

With respect to the analysis of the single corporate governance mechanisms on firm value, presented by regression models (1)-(6) of table 13, all regression models have a relatively high and constant adjusted coefficient of determination (adjusted R^2)[334] ranging from 0.620 to 0.643. However, only disclosure (*DISC*) has a significantly positive coefficient. This result suggests that companies with a more transparent real estate-specific disclosure practice have higher market valuations. Once again, it should be emphasized that these results might suffer from omitted variable bias and therefore need to be scrutinized.

Adding all corporate governance mechanisms in one model should reduce omitted variable bias and improve the quality of the model. This can be verified by the increase in adjusted R^2 to 0.677, reflecting the highest value of all re-

[334] R^2 is a measure of the proportion of variability of the dependent variable explained by the model and corresponds to a number between zero and one. A value close to zero suggests a poor model.

gression models. The result for disclosure (*DISC*) of model (6) remains robust in model (7) reflecting a significant positive coefficient at the 1% level.

As opposed to the regressions focusing on the corporate governance mechanisms in isolation, the combined regression of all corporate governance mechanisms leads the variables board size (*lnBSIZE*), board independence (*BIND*) and insider ownership (*INSIDER*) to become statistically significant at the 10% level and institutional ownership (*INST*) to become significant at the 5% level. In accordance with Yermack (1996), Conyon/Peck (1998), Eisenberg et al. (1998) and Loderer/Peyer (2002), smaller boards are considered more efficient and lead to a higher valuation by the capital market. In support of the findings by Rosenstein/Wyatt (1990), Byrd/Hickman (1992) and Millstein/MacAvoy (1998), a significantly positive correlation between board independence (*BIND*) and market valuation can be documented. Furthermore, companies with greater fractions of insider ownership (*INSIDER*)[335] and institutional ownership (*INST*) reveal higher Tobin's Q ratios. The former is consistent with empirical results of Chung/Pruitt (1996) and Capozza/Seguin (2003), whereas the latter is in line with prior research by Pound (1988). Though having a positive coefficient, leverage (*LEV*) remains insignificant in all regressions.

5.3.2.3 Robustness Check of OLS Results

For the robustness checks model (7) of table 13 is referred to as the base or standard model and is once more depicted in column 1 of table 14 for reasons of comparison. In order to test whether the OLS-results presented in chapter 5.3.2.2 are robust, model (1) of table 14 is modified in several ways.

First, following Drobetz et al. (2004), Beiner et al. (2006) and Black et al. (2006), among others, the Market-to-Book ratio (*MB*) is used as measure of firm value instead of Tobin's Q. *MB* is defined as the market value of equity to the

[335] Stulz (1988) and Morck et al. (1988a) theoretically argue that the market value of the firm first increases and then decreases as the percentage of insider ownership rises. Empirically, this notion of a curvilinear relationship between firm value and insider ownership is supported by studies of Morck et al. (1988a), McConnell/Servaes (1990) and Han (2006). However, having accounted for $INSIDER^2$ in regression models (3) and (7), a parabolic relationship between insider ownership and Tobin's Q could not be observed.

book value of equity. Second, *INSIDER* is replaced by *CEOEQ*, an alternative proxy for the incentive alignment of corporate management. *CEOEQ* is an indicator variable reflecting the remuneration structure of CEOs. It is equal to one if the CEO receives an equity-based remuneration, zero otherwise. Third, *INST* is subsequently substituted by three alternative measures of ownership concentration: *BINST*, *OBLOCK* and *LARGE*. *BINST* stands for institutional blockownership and corresponds to the percentage of equity held by institutions with shareholdings of 5% or above. *OBLOCK* denotes outsider blockholdings. It is defined as the percentage of equity held by owners of 5% or more of total equity without close relations to corporate officers or directors. *LARGE*, the last proxy for ownership concentration, is measured as the percentage of equity held by the largest shareholder. Fourth, consistent with Yermack (1996), Black et al. (2006) and Beiner et al. (2006) the natural logarithm of total sales (*lnSALES)* is used as an alternative measure of firm size. Finally, robustness is tested by re-estimating the base model for the REIT and Non-REIT subsamples.

Table 14: Coefficient Estimates from OLS Regressions of Tobin's Q and Market-to-Book on different Corporate Governance Mechanisms and Control Variables

	Dependent Variable								
Independent Variable	Q (1)	MB (2)	Q (3)	Q (4)	Q (5)	Q (6)	Q (7)	Q (8)	Q (9)
								REIT	Non-REIT
lnBSIZE	**-0.232*** (-1.704)	-0.291 (-1.234)	**-0.298**** (-2.000)	**-0.238**** (-1.728)	**-0.233*** (-1.709)	**-0.263*** (-1.896)	**-0.276**** (-2.189)	0.009 (0.008)	**-0.307*** (-1.811)
BIND	**0.406*** (1.982)	**0.692**** (2.159)	0.305 (1.543)	**0.417**** (2.025)	**0.416**** (2.014)	**0.483**** (2.194)	**0.409**** (2.011)	0.242 (1.656)	**0.495*** (1.703)
INSIDER	**0.384*** (1.755)	0.339 (1.044)		0.360 (1.658)	**0.390*** (1.751)	0.242 (1.123)	**0.426*** (1.976)	0.139 (1.097)	0.351 (1.364)
CEOEQ			**0.148*** (1.678)						
INST	**0.379**** (2.376)	**0.661**** (2.107)	0.272 (1.638)				**0.386**** (2.303)	-0.045 (-0.395)	0.414 (1.532)
BINST				**0.298*** (1.849)					
OBLOCK					**0.391**** (2.462)				
LARGE						**0.284*** (1.723)			
LEV	0.194 (1.032)	0.503 (1.529)	0.264 (1.329)	0.184 (0.958)	0.183 (0.964)	0.156 (0.745)	0.171 (0.916)	0.232 (1.175)	-0.116 (-0.419)
DISC	**1.726***** (4.177)	**3.192***** (4.218)	**1.515***** (3.166)	**1.738***** (4.160)	**1.807***** (4.372)	**1.825***** (3.943)	**1.567***** (3.536)	**0.900***** (4.249)	**2.242***** (3.452)
lnASSETS	-0.044 (-1.256)	-0.092 (-1.284)	**-0.061*** (-1.679)	-0.045 (-1.245)	-0.042 (-1.174)	-0.046 (-1.204)		-0.006 (-0.180)	-0.030 (-0.570)
lnSALES							-0.007 (-0.323)		
lnYEARS	**-0.105**** (-2.408)	**-0.176**** (-2.480)	**-0.090*** (-1.966)	**-0.105**** (-2.392)	**-0.103**** (-2.370)	**-0.117**** (-2.611)	**-0.114***** (-2.722)	**-0.083**** (-2.148)	-0.082 (-1.660)
ROA (t-1)	**2.724***** (3.777)	**3.815***** (3.752)	**2.901***** (4.024)	**2.695***** (3.643)	**2.721***** (3.751)	**2.709***** (3.524)	**2.811***** (3.524)	**1.281*** (1.958)	**2.871***** (3.533)
ROA (t)	**-3.667***** (-5.193)	**-5.522***** (-7.197)	**-3.560***** (-4.933)	**-3.640***** (-5.086)	**-3.667***** (-5.155)	**-3.525***** (-5.182)	**-3.711***** (-5.301)	**-0.513**** (-2.402)	**-4.197***** (-11.32)
VOLA	**0.008**** (2.521)	**0.017***** (2.924)	**0.005*** (1.877)	**0.008**** (2.490)	**0.008**** (2.502)	**0.010**** (2.565)	**0.008**** (2.625)	**0.054***** (2.838)	**0.009*** (1.897)
DIVERS	**-0.152*** (-1.958)	**-0.277**** (-2.094)	**-0.180**** (-2.145)	**-0.154*** (-1.974)	**-0.163**** (-2.151)	**-0.160**** (-2.039)	**-0.146*** (-1.870)	-0.016 (-0.282)	**-0.294**** (-2.555)
REIT	**0.215*** (1.744)	0.113 (0.490)	0.194 (1.596)	**0.213*** (1.701)	0.205 (1.643)	0.184 (1.463)	**0.227*** (1.688)		
Constant	**1.660***** (2.942)	**2.260**** (2.010)	**2.273***** (3.743)	**1.682***** (2.921)	**1.595***** (2.740)	**1.617***** (2.542)	**1.045***** (3.086)	0.168 (0.270)	**1.407*** (1.743)
BSYSTEM	+	+	+	+	+	+	+	+	+
COUNTRY	+	+	+	+	+	+	+	+	+
Sample Size	110	110	110	110	110	110	110	42	68
F-Statistic (p-value)	**14.450***** (0.000)	**13.578***** (0.000)	**14.104***** (0.000)	**14.135***** (0.000)	**14.421***** (0.000)	**14.163***** (0.000)	**14.220***** (0.000)	**2.615**** (0.015)	**15.687***** (0.000)
Adjusted R^2	0.677	0.662	0.671	0.672	0.677	0.672	0.673	0.371	0.767

Note: The table shows the coefficient estimates from OLS regressions of Tobin's Q and market-to-book on different corporate governance mechanisms and control variables. The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. All t-values, reported in parentheses below the respective coefficients, are calculated on the basis of White heteroskedasticity-consistent standard errors. *, ** and *** respectively indicate significance at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

Using *MB* as dependent variable in model (2) of table 14 provides largely similar results to the ones of the base model with the standard specification. Only *BSIZE*, *INSIDER* and *REIT* cease to have significant coefficients. Replacing *CEOEQ* by *INSIDER* in model (3) also largely delivers robust results. However, *INST* has become insignificant with a p-value slightly above the 10% threshold. *CEOEQ* reveals a significantly positive coefficient at the 10% level. It appears that incentive alignment of managers has a positive effect on firm value.

Altering the variables of ownership concentration in models (4) to (6) generates robust results for almost all variables of the model except for *INSIDER* and *REIT*. While *INSIDER* turns insignificant in models (4) and (6), *REIT* ceases to be significant in models (5) and (6). The variables *BINST*, *OBLOCK* and *LARGE* are all statistically significant at the 10% or 5% level. Furthermore, basically all results are robust to a substitution of *lnASSETS* for *lnSALES* in model (7). It can be observed that the results for *lnBSIZE* and *BIND* become even more significant than in the standard model.

A glance at the OLS regression results of the base model using the REIT-sample, which are presented in model (8) of table 14, indicates that the only corporate governance mechanism that remains statistically significant is *DISC*. In contrast, when estimating the standard model using the Non-REIT sample in model (9) *lnBSIZE* and *BIND* stay significant at the 10% level, whereas *DISC* remains significant at the 1% level. Interestingly, the impact of *DIVERS* on *Q* is significantly negative for the Non-REIT sample but not for the REIT sample.

Overall, *LEV* is statistically insignificant in all models of table 14. By contrast, *DISC* remains highly significant at the 1% level in all regressions. It appears that a transparent real estate-specific disclosure has a positive effect on firm value.

5.3.3 Instrumental Variable (IV) Analysis

5.3.3.1 Hausman Test for Endogeneity

Before making use of instrumental variable estimation, such as 3SLS, it needs to be examined whether the six corporate governance variables are endogenous or in other words whether they are correlated with the error term. In case they are not endogenous, there will be no need for instrumental variable estimation since OLS will yield efficient estimates.

A commonly used method to check for joint endogeneity is a test often referred to as Hausman test or Durbin-Wu-Hausman test, which was proposed by Durbin (1954), Wu (1973) and Hausman (1978). The basic idea behind this test is to compare OLS and 2SLS estimators to find out whether the differences are statistically significant. If they differ significantly, it can be concluded that the suspected endogenous variables are in fact endogenous.[336]

The implementation of the Hausman test is basically straight-forward and resembles the procedure of a 2SLS regression.[337] In the first stage, the reduced form is estimated for each potentially endogenous corporate governance variable. The residuals of these first-stage regressions are included in equation 5.1 (Q) which is then estimated using OLS. If the coefficient of one of the residuals is significantly different from zero there is evidence that at least one of the governance variables is indeed endogenous.

[336] See Davidson/MacKinnon (1993), pp. 237ff; Wooldridge (2000), p. 483.

[337] For a general and intuitive description of the Hausman test for endogeneity see Pindyck/Rubinfeld (1998), pp. 353f and Wooldridge (2000) pp. 483f.

Table 15: Results of the Hausman Test for Endogeneity

	Dependent Variable = Tobin's Q		
Variable	Coefficient	t-value	p-value
Residuals_lnBSIZE	-0.103	(-0.241)	(0.810)
Residuals_BIND	0.174	(0.273)	(0.786)
Residuals_INSIDER	-0.555	(-0.951)	(0.344)
Residuals_lNST	0.332	(0.802)	(0.425)
Residuals_LEV	-0.230	(-0.373)	(0.710)
Residuals_DISC	**-3.277*** **	(-3.054)	(0.003)
lnBSIZE	-0.246	(-0.692)	(0.491)
BIND	0.355	(0.594)	(0.554)
INSIDER	0.838	(1.452)	(0.150)
INST	0.350	(1.103)	(0.273)
LEV	0.333	(0.636)	(0.527)
DISC	**4.347*** **	(4.488)	(0.000)
lnASSETS	**-0.153*** **	(-2.959)	(0.004)
lnYEARS	**-0.100** **	(-2.272)	(0.026)
ROA (t-1)	**2.731*** **	(3.792)	(0.000)
ROA (t)	**-3.900*** **	(-5.806)	(0.000)
VOLA	0.009	(1.554)	(0.124)
DIVERS	**-0.173** **	(-2.238)	(0.028)
REIT	-0.055	(-0.413)	(0.681)
Constant	2.817	(3.164)	(0.002)
BSYSTEM	+		
COUNTRY	+		
F-Statistic	**12.781*** **		(0.000)
Adjusted R^2	0.713		

Note: The table shows the coefficient estimates from an OLS regression of Tobin's Q on different corporate governance mechanisms, control variables and the residuals of a reduced form regression for each corporate governance variable. The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. All t-values and p-values, reported in parentheses on the right-hand side of the respective coefficients, are calculated on the basis of White heteroskedasticity-consistent standard errors. *, ** and *** respectively indicate significance at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

As can be observed in table 15, the first-stage residual of *DISC* is negative and significant at the 1% level for a joint F-test yielding an F-value of 12.781 and p-value of 0.000. As a result, the null hypothesis of no endogeneity has to be rejected.

Accordingly, all corporate governance variables are explicitly treated as endogenous variables in the subsequent analysis using 3SLS estimation. In order to gain a more comprehensive understanding of this particular estimation method, it will be described in the following chapter.

5.3.3.2 Concept of Three-Stage Least Squares (3SLS)

The system of equations, which will be specified in chapter 5.3.3.3, is estimated using three-stage least squares (3SLS) which was originally introduced by Zellner/Theil (1962). This estimation method accounts for joint endogeneity and basically relies on instrumental variables as well as the least squares method. 3SLS is a so-called full system estimation method, indicating that all equations of the system are estimated jointly.[338]

As its name suggests, 3SLS is computed in three stages, whereas the first two stages are equivalent to the ones of two-stage least squares (2SLS)[339] and are applied separately to each equation of the system. In the first stage, the reduced form of the system[340] is estimated, implying that each endogenous variable is regressed on all exogenous variables of the system. In the second stage, the structural form of the system is estimated, whereas the explanatory

[338] See Schmidt (1976), p. 201; Davidson/MacKinnon (1993), p. 651; Greene (2003), pp. 396ff.

[339] 2SLS was originally proposed by Theil (1953) and Basmann (1957). It is a single equation estimation method in the sense that the estimation procedure is performed separately for each equation.

[340] Basically two general forms of the system of equations have to be differentiated: the structural form and the reduced form. The structural form of the system is given by the underlying theory. It contains endogenous variables on the left-hand side and (in the presence of joint endogeneity) endogenous as well as exogenous or predetermined variables on the right-hand side. The reduced form is derived from the structural form of the system. It contains all endogenous variables as a function solely of the predetermined variables of the model; see Pindyck/Rubinfeld (1998), p. 340.

endogenous variables are replaced by the fitted values[341] from the first stage regressions.[342] Once the 2SLS parameters have been retrieved, the residuals of each equation are used to estimate the covariance matrix of the error terms. This information is required to apply generalized least squares (GLS) in the third and final stage of the 3SLS estimation procedure, in which all equations are estimated simultaneously.[343]

As opposed to 2SLS, 3SLS explicitly takes into account the cross-equation error covariances and thereby captures the correlation among the equations of the system. As a consequence, 3SLS parameter estimates generally reveal smaller variances than their 2SLS counterparts yielding asymptotically more efficient estimates.[344]

A formal description of the essential ideas underlying the concept of 3SLS is provided below. Before getting into the details of the estimation procedure, it is necessary to depict the basic notations and assumptions of the system of equations.

The corresponding notation is fairly standard and closely follows Zellner/Theil (1962), Schmidt (1976), Wooldridge (2002) and Greene (2003). Considering a complete system[345] of G linear structural equations with G endogenous, K exogenous or predetermined variables and T observations the ith equation can be written in the following form:

$$y_i = Y_i\gamma_i + X_i\delta_i + u_i, \qquad i = 1,2,\ldots,G \tag{5.2}$$

[341] A fitted value corresponds to the *y* output value that is predicted by a regression equation.

[342] See Davidson/MacKinnon (1993), p. 220; Pindyck/Rubinfeld (1998), p. 361.

[343] See Zellner/Theil (1962), pp. 54, 57; Schmidt (1976), p. 203; Pindyck/Rubinfeld (1998), p. 361.

[344] See Belsley (1988), p. 21; Pindyck/Rubinfeld (1998), pp. 361, 364; Greene (2003), p. 407. For a theoretical proof of the efficiency of 3SLS relative to 2SLS see Schmidt (1976), pp. 209ff. According to Pindyck/Rubinfeld (1998), p. 364, the gain in efficiency associated with the application of 3SLS is around 5%. Nevertheless, 3SLS does not necessarily need to be more efficient than 2SLS, e.g. if there is no cross-equation covariation. In this case both estimation techniques are equally efficient; see Schmidt (1976), p. 211.

[345] The system of equations is complete if there are as many equations as there are endogenous variables; see Greene (2003), p. 378.

or

$$\begin{pmatrix} y_1 \\ y_2 \\ \cdot \\ \cdot \\ \cdot \\ y_G \end{pmatrix} = \begin{pmatrix} Y_1 & 0 & \cdot & \cdot & \cdot & 0 \\ 0 & Y_2 & \cdot & \cdot & \cdot & 0 \\ \cdot & \cdot & \cdot & & & \cdot \\ \cdot & \cdot & & \cdot & & \cdot \\ \cdot & \cdot & & & \cdot & \cdot \\ 0 & 0 & \cdot & \cdot & \cdot & Y_G \end{pmatrix} \begin{pmatrix} \gamma_1 \\ \gamma_2 \\ \cdot \\ \cdot \\ \cdot \\ \gamma_G \end{pmatrix} + \begin{pmatrix} X_1 & 0 & \cdot & \cdot & \cdot & 0 \\ 0 & X_2 & \cdot & \cdot & \cdot & 0 \\ \cdot & \cdot & \cdot & & & \cdot \\ \cdot & \cdot & & \cdot & & \cdot \\ \cdot & \cdot & & & \cdot & \cdot \\ 0 & 0 & \cdot & \cdot & \cdot & X_G \end{pmatrix} \begin{pmatrix} \delta_1 \\ \delta_2 \\ \cdot \\ \cdot \\ \cdot \\ \delta_G \end{pmatrix} + \begin{pmatrix} u_1 \\ u_2 \\ \cdot \\ \cdot \\ \cdot \\ u_G \end{pmatrix} \tag{5.3}$$

where y_i is a $[T \times 1]$-vector of the dependent variables, Y_i a $[T \times (G-1)]$-matrix of the endogenous explanatory variables, γ_i a $[(G-1) \times 1]$-vector of the endogenous explanatory variable coefficients, X_i a $[T \times K]$-matrix of the exogenous variables, δ_i a $[K \times 1]$-vector of the exogenous variable coefficients, and u_i a $[T \times 1]$-vector of the error terms.

A more general notation for systems of equations which is commonly used is the following:

$$y_i = Z_i \beta_i + u_i, \qquad i = 1,2,\ldots,G \tag{5.4}$$

or

$$\begin{pmatrix} y_1 \\ y_2 \\ \cdot \\ \cdot \\ \cdot \\ y_G \end{pmatrix} = \begin{pmatrix} Z_1 & 0 & \cdot & \cdot & \cdot & 0 \\ 0 & Z_2 & \cdot & \cdot & \cdot & 0 \\ \cdot & \cdot & \cdot & & & \cdot \\ \cdot & \cdot & & \cdot & & \cdot \\ \cdot & \cdot & & & \cdot & \cdot \\ 0 & 0 & \cdot & \cdot & \cdot & Z_G \end{pmatrix} \begin{pmatrix} \beta_1 \\ \beta_2 \\ \cdot \\ \cdot \\ \cdot \\ \beta_G \end{pmatrix} + \begin{pmatrix} u_1 \\ u_2 \\ \cdot \\ \cdot \\ \cdot \\ u_G \end{pmatrix} \tag{5.5}$$

or

$$y = Z\beta + u \tag{5.6}$$

whereas $Z_i = (Y_i, X_i)$ and $\beta_i = \begin{pmatrix} \gamma_i \\ \delta_i \end{pmatrix}$.

With respect to the estimation of the system of equations with 3SLS some assumptions need to be made. First, all exogenous variables are assumed to be uncorrelated with the disturbances. Second, it is assumed that cross-equation correlations among different equations exist. These assumptions can be written as follows.

$$E(u_i|X_i) = 0;\ E(u_i' u_j|X) = \Omega = \Sigma \otimes \mathrm{I} = \begin{pmatrix} \sigma_{11}\mathrm{I} & \sigma_{12}\mathrm{I} & . & . & . & \sigma_{1G}\mathrm{I} \\ \sigma_{21}\mathrm{I} & \sigma_{22}\mathrm{I} & . & . & . & \sigma_{2G}\mathrm{I} \\ . & . & . & & & . \\ . & . & & . & & . \\ . & . & & & . & . \\ \sigma_{G1}\mathrm{I} & \sigma_{G2}\mathrm{I} & . & . & . & \sigma_{GG}\mathrm{I} \end{pmatrix} \quad (5.7)$$

where Σ refers to the error covariance matrix and I to an identity matrix.

As previously indicated, the estimation procedure of 3SLS includes three stages. At stage one, each Y_i is regressed separately on all X_i of the system of equations (with X_i being the instruments for Y_i)

$$\hat{Y}_i = X\left[(X'X)^{-1} X'Y_i\right] \quad (5.8)$$

At the second stage, the obtained fitted values $\hat{Y}_i$ are used to replace all endogenous explanatory variables Y_i of matrix Z_i resulting in matrix $\hat{Z}_i$ (where $\hat{Z}_i$ refers to the predictions of Z_i). Afterwards, β_i is estimated by a least square regression of y_i on $\hat{Z}_i$ for each equation i.

$$\hat{\beta}_{i,2SLS} = \left(\hat{Z}_i'\hat{Z}_i\right)^{-1}\hat{Z}_i'y_i = \left[\hat{Z}_i'X\left(X'X\right)^{-1}X'Z_i\right]^{-1}Z_i'X\left(X'X\right)^{-1}X'y_i \tag{5.9}$$

In a next step, the covariance matrix of the disturbances Σ needs to be estimated. For this purpose the residuals of the second stage regressions are used.

$$\hat{\Sigma} = \frac{\left(y_i - Z_i\hat{\beta}_{i,2SLS}\right)'\left(y_j - Z_j\hat{\beta}_{j,2SLS}\right)}{T} = \frac{\hat{u}_i'\hat{u}_j}{T}, \qquad i, j = 1,2,\ldots,G \tag{5.10}$$

At stage three, the estimated error covariance matrix is explicitly accounted for in a GLS estimation of the complete system of equations in order to consider any cross-equation correlations. The corresponding standard 3SLS estimator is computed in the following way:

$$\hat{\beta}_{3SLS} = \left[\hat{Z}'\left(\hat{\Sigma}^{-1}\otimes \mathrm{I}\right)\hat{Z}\right]^{-1}\hat{Z}'\left(\hat{\Sigma}^{-1}\otimes \mathrm{I}\right)y = \left(\hat{Z}'\hat{\Omega}^{-1}\hat{Z}\right)^{-1}\hat{Z}\hat{\Omega}^{-1}y\,. \tag{5.11}$$

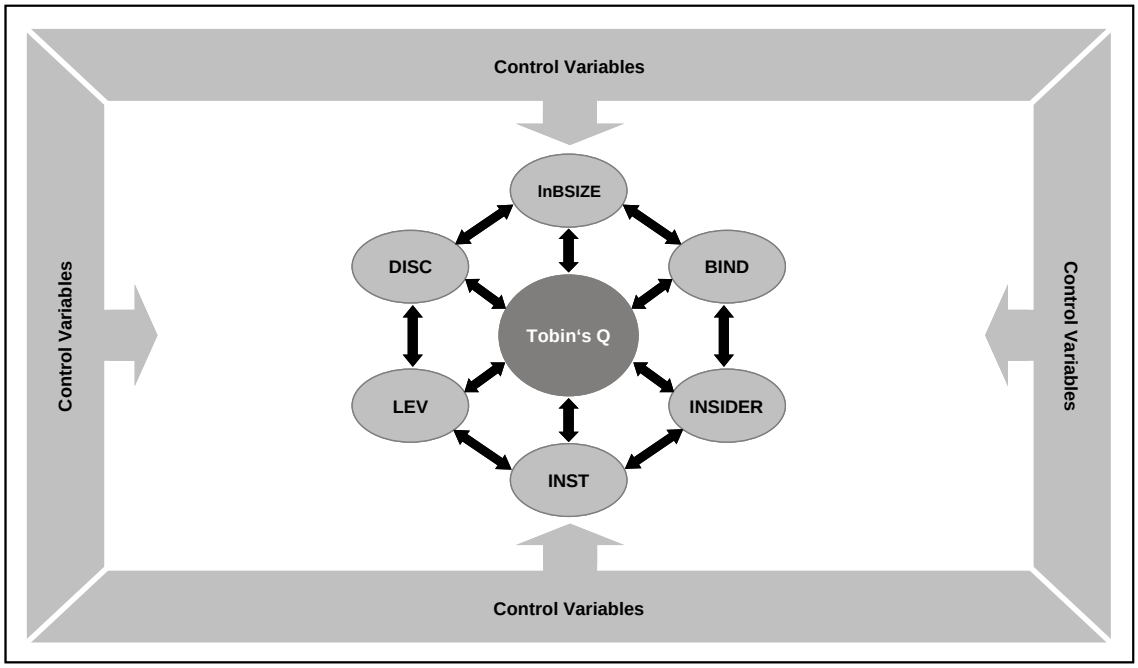
5.3.3.3 Specification of the System of Equations

Before going into further detail on the specification of the structural model some general thoughts on what can be expected from theoretical models should be kept in mind. They necessarily involve oversimplifications and abstractions but, postulating a correct specification, they are the closest one can get in explaining real life situations and relationships.[346]

The basic assumption underlying the simultaneous equation model subject to the present empirical study is that firm value and corporate governance mechanisms are endogenous and therefore jointly determined. The system is composed of seven equations, whereas Tobin's Q and each of the previously described principal corporate governance mechanisms respectively appear as a dependent variable on the left-hand side of one equation and as an explanatory variable on the right-hand side of all other equations. This allows each of the corporate governance mechanisms to affect Tobin's Q and at the same time Tobin's Q to affect each of the corporate governance mechanisms (see figure 19).

[346] See Baumol (1959), p. 1; Hausman (1983), p. 397.

Figure 19: Illustration of Variable Dependencies within the Empirical Model



Source: Own illustration.

In order to produce consistent parameter estimates, the specification of the simultaneous equation model must satisfy the order and rank condition for identification.[347] Testing each of these conditions equation-by-equation, it can be confirmed that the system is jointly identified.

Denoting CGM_m (with m ranging from one to six) as the explanatory corporate governance variables appearing on the right-hand side, the system of equations is specified as follows:

The first equation with Tobin's Q (Q) as dependent variable is equivalent to the one of the OLS analysis that is described and specified in chapter 5.3.2.1. To avoid redundancies, it is referred to that chapter for a detailed explanation of

[347] The order condition for identification claims, that the exogenous (instrumental) variables, excluded from the respective equation, must be greater than or equal to the number of equations in the system minus one. The rank condition for identification states that the column rank of the joint coefficient matrix, with the i^{th} row as well as the i^{th} column being set to zero, must be greater than or equal to the number of equations in the system minus one. For a general discussion of the rank and order condition for identification see Hausman (1983), pp. 402ff; Judge et al. (1988), pp. 623ff; Pindyck/Rubinfeld (1998), pp. 368ff; Davidson/MacKinnon (1993), pp. 631ff; Greene (2003), pp. 389ff.

the choice of variables. Nevertheless, for reasons of completeness the *Q*-equation is once more presented below.

$$Q_t = \beta_0 + \sum_{m=1}^{6} \beta_m CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 \ln YEARS_t + \beta_9 ROA(t-1)_t + \beta_{10} ROA(t)_t + \beta_{11} VOLA_t + \beta_{12} DIVERS_t + \beta_{13} REIT_t + \beta_{14} BSYSTEM_t + \sum_{n=1}^{4} \beta_{14+n} COUNTRY_{tn} + u_t \quad (5.12)$$

Board size (*lnBSIZE*) serves as dependent variable in the second equation of the system which is specified as follows.

$$\ln BSIZE_t = \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 REIT_t + \beta_9 BSYSTEM_t + \sum_{n=1}^{4} \beta_{9+n} COUNTRY_{tn} + u_t \quad (5.13)$$

In addition to *Q* and the remaining corporate governance mechanisms, the specification of the *lnBSIZE*-equation relies on firm size, REIT-structure, board system and the different country indicator variables. In line with e.g. Yermack (1996), Eisenberg et al. (1998) and Beiner et al. (2006), larger companies are expected to have larger boards of directors. Consequently, *lnASSETS* should be positively related to *lnBSIZE*. Moreover, *REIT*, *BSYSTEM* and *COUNTRY*[348] are included to control for REIT, board system and country effects.

[348] Among others, La Porta et al. (2002), Doidge et al. (2004), Klapper/Love (2004), Durnev/Kim (2005) and Agrawal et al. (2007) emphasize the importance of country-level effects in predicting corporate governance. Therefore, the *COUNTRY* indicator variables will be utilized in equations 5.12 to 5.18.

The dependent variable of the third equation, depicted below, is board independence (*BIND*).

$$BIND_t = \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 TENURE_t + \beta_9 CEOPRES_t + \beta_{10} REIT_t + \beta_{11} BSYSTEM_t + \sum_{n=1}^{4} \beta_{12+n} COUNTRY_{tn} + u_t \quad (5.14)$$

Again, firm size is selected as the first control variable of equation 5.14. As argued by Agrawal/Knoeber (1996), a greater visibility of larger firms might induce a higher percentage of board seats devoted to representatives of the public. Accordingly, *BIND* is expected to depend positively on *lnASSETS*. To account for a possible relationship between board independence and the number of years as CEO, *TENURE* is introduced as second control variable. Based on empirical evidence of Hermalin/Weisbach (1988), it is expected that board independence declines over a CEO's tenure. As third control variable *CEOPRES* is added to the equation. Empirical findings of Shivdasani/Yermack (1999) and Ghosh/Sirmans (2003) suggest that CEO involvement in the board selection process goes along with a decrease in the number of independent board members. Hence, the presence of a CEO or former CEO serving as chairman is assumed to reduce the independence of the board, implying a negative relationship between *CEOPRES* and *BIND*. Parallel to equation 5.13, the indicator variables *REIT*, *BSYSTEM* and *COUNTRY* are included in equation 5.14.

Insider ownership (*INSIDER*) represents the regressand of the fourth equation of the system, which is specified in the following way.

$$\begin{aligned} INSIDER_t = {} & \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 VOLA_t \\ & + \beta_9 NOFFICER_t + \beta_{10} CEOPERF + \beta_{11} FOUNDER_t + \beta_{12} DIVERS_t \\ & + \beta_{13} REIT_t + \beta_{14} BSYSTEM_t + \sum_{n=1}^{4} \beta_{14+n} COUNTRY_{tn} + u_t \end{aligned} \quad (5.15)$$

Agrawal/Knoeber (1996) and Himmelberg et al. (1999) hypothesize that insider ownership is lower when the costs of holding an undiversified portfolio are higher. Consistent with their intuition and specification, firm size (*lnASSETS*) and the standard deviation of stock returns (*VOLA*) are used as indicators for these costs. For both variables a negative relationship with *INSIDER* is anticipated. To control for a potential relationship between insider ownership and the number of executive officers in the company, *NOFFICER* is introduced as third exogenous variable to the *INSIDER*-equation. Due to a likely influence of the presence of a founding CEO on insider ownership, *FOUNDER* represents another relevant control variable. Founding CEOs may be reluctant to dispose a greater fraction of their companies' shares to other shareholders, e.g. to stay in control over the company. Chung/Pruitt (1996) further state that the executive who founded the firm and his family successors may hold a significant percentage of the firm's equity capital strictly for historical reasons. Therefore, it is conjectured that *INSIDER* will depend positively on *FOUNDER*. Another possible relationship accounted for in equation 5.15 is the one between a performance-based remuneration of the CEO (*CEOPERF*) and the level of insider ownership in a company. In this context, it may be assumed that CEOs receive equity as part of their performance-based pay, implying a possible positive relationship between *CEOPERF* and *INSIDER*. Drawing on prior research by Anderson et al. (2000) who document a smaller fraction of CEO stock ownership in diversified relative to focused firms, it is further expected that *DIVERS* will negatively

affect *INSIDER*. Once again, *REIT*, *BSYSTEM* and *COUNTRY* are included as last control variables in equation 5.15.

The fifth equation of the simultaneous equation model focuses on institutional ownership (*INST*).

$$\begin{aligned} INST_t = {} & \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 ROA(t-1)_t \\ & + \beta_9 ROA(t)_t + \beta_{10} GROWTH_t + \beta_{11} LIQUID_t + \beta_{12} NOBLOCK_t \\ & + \beta_{13} REIT_t + \beta_{14} BSYSTEM_t + \sum_{n=1}^{4} \beta_{14+n} COUNTRY_{tn} + u_t \end{aligned} \quad (5.16)$$

Evidently, the motivation and determinants of stock ownership by institutions differ decisively from the ones of insiders. This difference is reflected in the specification of equation 5.16.

Firm size is selected as the first control variable. In accordance with Smith (1996), Chan et al. (1998) and Ghosh/Sirmans (2003), it is postulated that institutional investors tend to invest in larger and more mature firms. Hence, *lnASSETS* should be positively correlated with *INST*. As opposed to equation 5.15, *VOLA* is not included as a control variable since institutions generally hold large and diversified portfolios. In other words, *VOLA* should not necessarily be an important issue with respect to the selection of a particular stock.[349] Instead, different measures of operating performance are accounted for, including return on assets of the previous period *ROA(t-1)*, return on assets of the current period *ROA(t)* and revenue growth *GROWTH*. Since it is likely to be more appealing to institutional investors to own stock in profitable firms, these variables are expected to be positively related to *INST*. In order to capture a potential effect of liquidity on the level of institutional shareholdings, *LIQUID* is determined to serve as fifth control variable. However, the sign of a possible relationship is difficult to predict a priori. On the one hand, Chan et al. (1998) and Benveniste et al. (2001) point out that greater liquidity may induce higher levels of institu-

[349] For a similar argumentation see Agrawal/Knoeber (1996), p. 383.

tional ownership. This belief may be based on the argument by Diamond/Verrecchia (1991) and Maug (1998) that institutions target more liquid stocks in order to be able to sell large stakes in a company at a lower cost. On the other hand, Holmström/Tirole (1993), Maug (1998) and Becht (1999) contend that an increased concentration of ownership implies less liquidity since the company's shares are less widely held. Another variable with a potential relation to *INST* is the number of outside blockholders *NOBLOCK*. Since institutional share owners often correspond to outside blockholders, *INST* should be higher for firms with a greater number of blockholders. Again, *REIT*, *BSYSTEM* and *COUNTRY* are taken into account.

Leverage (*LEV*) is the dependent variable of the sixth equation of the system.

$$\begin{aligned} LEV_t = {} & \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 ROA(t-1)_t \\ & + \beta_9 VOLA_t + \beta_{10} LIQUID_t + \beta_{11} TENURE_t + \beta_{12} REIT_t \\ & + \beta_{13} BSYSTEM_t + \sum_{n=1}^{4} \beta_{13+n} COUNTRY_{tn} + u_t \end{aligned} \tag{5.17}$$

According to Rajan/Zingales (1995), larger and more mature firms with stable cash flows are less prone to bankruptcy and are therefore able to take on higher levels of debt.[350] As a result, a positive relationship between *lnASSETS* and *LEV* can be inferred. Furthermore, companies with a lower historical profitability may have more trouble to raise equity and therefore rely more on debt when it comes to financing future investments. Alternatively, Agrawal/Knoeber (1996) make the point that the availability of internal funds acts as a substitute to debt financing. This argumentation is in line with the pecking order theory, developed by Myers (1984), in which a company prefers internal over external

[350] See also Smith/Watts (1992).

financing and debt over equity financing.[351] Following these intuitions, *LEV* should depend negatively on *ROA(t-1)*. Due to higher costs of financial distress, higher levels of debt should entail a greater risk associated with the company and lead to more volatile equity prices. This reasoning has been supported by recent research of Drees/Eckwert (2000) and Chaudhry et al. (2004). It is therefore hypothesized that *VOLA* and *LEV* are positively correlated. Liquidity is utilized as an additional control variable in equation 5.17. *LIQUID* should have an adverse effect on *LEV* for the following reason. The lower the liquidity of a firm the more difficult it is for a company to raise capital on equity markets. In this situation, it may be cheaper and more advantageous to raise capital on debt markets. This notion is consistent with empirical findings of Butler et al. (2005) and Frieder/Martell (2006). In order to account for a potential impact of the CEO's tenure on the capital structure of the firm, *TENURE* is introduced to the *LEV*-equation. Consistent with the previous equations, *REIT*, *BSYSTEM*, and *COUNTRY* are taken into account as final control variables in equation 5.17.

The dependent variable of the last equation of the system is disclosure (*DISC*).

$$\begin{aligned} DISC_t = {} & \beta_0 + \beta_1 Q_t + \sum_{m=1}^{5} \beta_{1+m} CGM_{tm} + \beta_7 \ln ASSETS_t + \beta_8 ROA(t-1)_t \\ & + \beta_9 ROA(t)_t + \beta_{10} LIQUID_t + \beta_{11} INTERN_t + \beta_{12} REIT_t \\ & + \beta_{13} BSYSTEM_t + \sum_{n=1}^{4} \beta_{13+n} COUNTRY_{tn} + u_t \end{aligned} \tag{5.18}$$

Similar to the other equations, *DISC* is assumed to not only depend upon Q and the choice of the remaining corporate governance mechanisms but also on different control variables, such as firm size, operating profitability, liquidity and management style.

[351] Numerous empirical studies, such as Titman/Wessels (1988) and Fama/French (2002), were able to find evidence for an inverse relationship between profitability and leverage, eventually supporting the pecking order theory.

Larger and more mature firms are generally believed to have a more transparent disclosure. Diamond/Verrecchia (1991) and Lang/Lundholm (1993) argue that total cost of disclosure is decreasing with firm size and therefore predict a better disclosure for larger firms. This line of argumentation is supported by empirical results of Bushman et al. (2004), Khanna et al. (2004) and Hossain et al. (2005), among others. Hence, a positive relation is anticipated between *lnASSETS* and *DISC*. Besides, a greater profitability may go along with greater transparency because there is less motivation to hide information if the bottom line results are good. Support for this hypothesis comes from Lang/Lundholm (1993), Miller (2002) and Khanna et al. (2004). In order to control for a potential impact of management style on disclosure, *INTERN* is inserted as fifth control variable into the equation. According to Howe/Shilling (1990), Hsieh/Sirmans (1991), Cannon/Vogt (1995), Wei et al. (1995), Sagalyn (1996) and Ambrose/Linneman (2001) externally managed real estate companies suffer from severe agency costs, such as self-dealing by the external management team. In this respect, it can be argued that the management of externally advised companies is supposedly less willing to disseminate voluntary information than the management of internally managed companies in order to hide any diversion of corporate resources. Therefore, it may be concluded that internally managed companies are presumably more transparent than their externally managed counterparts, implying a positive association between *DISC* and *INTREN*. In addition, Diamond/Verrecchia (1991) and Kim/Verrecchia (1994) indicate that voluntary disclosure reduces information asymmetries between informed and uninformed investors and thereby increases liquidity of the stock. Taking the view that a more transparent disclosure is linked to a higher share turnover, *LIQUID* is included in equation 5.18, anticipating a positive relationship between the two variables. Ultimately, *REIT*, *BSYSTEM* and the four country indicator variables *COUNTRY* are added to control for potential influences.

5.3.3.4 Results of 3SLS Estimation

This chapter describes the results obtained from the estimation of the simultaneous equation system using 3SLS. At first, the coefficient estimates of equation 5.12 of the system are compared to the ones of the OLS standard regression model in chapter 5.3.2.2 to visualize the bias related to joint endogeneity. Apart from the impact of the different corporate governance mechanisms on firm value, the relationship among the corporate governance mechanisms is examined in further detail to detect potential complementary and substitution effects. Finally, the issue of reverse causation will be investigated.

Table 16 displays the coefficient estimates from the 3SLS regression treating Tobin's Q and the single corporate governance mechanisms as endogenous variables. Each column represents one equation of the system, ranging from the *Q*-equation in column (1) to the *DISC*-equation in column (7).

Table 16: Coefficient Estimates from 3SLS Regression with Tobin's Q and different Corporate Governance Mechanisms as Endogenous Variables

	Dependent Variable						
	Q	lnBSIZE	BIND	INSIDER	INST	LEV	DISC
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Q		0.034 (0.562)	-0.001 (-0.015)	**-0.077*** (-1.700)	-0.039 (-0.399)	0.012 (0.325)	0.055 (1.430)
lnBSIZE	**-0.726*** (-1.762)		-0.072 (-0.293)	-0.174 (-0.389)	**-0.705***** (-2.652)	-0.091 (-0.474)	**0.248***** (3.891)
BIND	0.494 (0.792)	-0.122 (-0.320)		-0.331 (-0.829)	-0.003 (-0.013)	-0.217 (-0.735)	0.123 (0.952)
INSIDER	**1.088**** (2.156)	-0.181 (-0.630)	0.210 (0.868)		-0.239 (-1.274)	**0.401**** (2.262)	-0.066 (-0.692)
INST	0.457 (1.178)	-0.116 (-0.455)	0.117 (0.612)	**-0.392**** (-2.445)		0.056 (0.368)	-0.034 (-0.434)
LEV	0.277 (0.442)	-0.043 (-0.124)	**-0.823***** (-2.583)	-0.118 (-0.293)	0.312 (1.294)		-0.011 (-0.098)
DISC	**6.315***** (5.707)	**2.337***** (3.579)	-0.643 (-0.847)	0.896 (0.755)	**1.900*** (1.908)	0.020 (0.032)	
lnASSETS	**-0.150**** (-2.097)	0.059 (1.324)	0.066 (1.639)	-0.045 (-0.476)	0.027 (0.796)	**0.054*** (1.836)	0.002 (0.113)
lnYEARS	**-0.085***** (-2.757)						
ROA (t-1)	**2.701***** (3.330)				0.353 (0.938)	**-0.426*** (-1.751)	-0.209 (-1.440)
ROA (t)	**-4.062***** (-11.826)				-0.102 (-0.279)		**0.265**** (1.966)
GROWTH					0.004 (1.398)		
VOLA	**0.011*** (1.813)			-0.004 (-1.080)		0.005 (1.367)	
LIQUID					**-0.098*** (-1.693)	-0.047 (-0.813)	-0.001 (-0.067)
NOFFICER				-0.009 (-0.355)			
NOBLOCK					**0.092***** (5.718)		
TENURE			**-0.007*** (-1.688)			**-0.008***** (-2.973)	
FOUNDER				**0.217***** (3.348)			
CEOPRES			-0.092 (-1.352)				
CEOPERF				-0.161 (-0.873)			
DIVERS	**-0.100*** (-1.761)			-0.084 (-1.371)			
INTERN							0.048 (1.311)
REIT	-0.249 (-1.516)	**-0.207*** (-1.820)	0.070 (0.696)	-0.110 (-0.675)	**-0.164*** (-1.649)	0.031 (0.398)	**0.076***** (2.734)
Constant	**2.550**** (2.270)	-0.374 (-0.482)	0.277 (0.449)	1.704 (1.564)	-0.168 (-0.289)	-0.387 (-0.717)	-0.261 (-0.950)
BSYSTEM	+	+	+	+	+	+	+
COUNTRY	+	+	+	+	+	+	+

continued

Wald Test (p-value)	**206.063***** (0.000)	**197.609***** (0.000)	**108.943***** (0.000)	**55.496***** (0.000)	**113.823***** (0.000)	**44.077***** (0.000)	**277.652***** (0.000)
Overidentification Test Chi² (0.05)	0.459 (7.815) (3)	10.007 (15.507) (8)	7.353 (12.592) (6)	6.049 (7.815) (3)	0.755 (7.815) (3)	7.534 (9.488) (4)	5.552 (9.488) (4)
Hausman System Sp. Test Chi² (0.05)	32.496 (41.337) (28)						

Note: The table shows the coefficient estimates from 3SLS regressions with Tobin's Q and different corporate governance mechanisms as endogenous variables. The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. All t-values are reported in parentheses below the respective coefficients. *, ** and *** respectively indicate significance at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface. With respect to the Overidentification test and the Hausman system specification test the 5% critical values of the Chi² distribution and the corresponding degrees of freedom are reported below the respective value of test statistic.

Taking a closer look at the *Q*-equation in column (1) reveals that three of the six principal corporate governance mechanisms have a significant impact on the companies' market value. These include board size (*lnBSIZE*) which is significantly negative at the 10% level and insider ownership (*INSIDER*) as well as a transparent real estate-specific disclosure (*DISC*) which are both significantly positive at the 5% and 1% level, respectively. All coefficients basically show the same signs as in the OLS regression. However, in contrast to the OLS results the coefficients of board independence (*BIND*) and institutional ownership (*INST*) are no longer significantly positive in the 3SLS regression. At the same time, leverage (*LEV*) remains statistically insignificant also in 3SLS. By comparing the elasticities of the 3SLS regression with those of the OLS regression, it can be further observed that the absolute values of the coefficients are a lot higher in the case of 3SLS, indicating that the impact of the corporate governance mechanisms on market valuation has been underestimated in the OLS estimation. This can be explained by the fact that OLS ignores joint endogeneity and the simultaneity of the process by which these variables are determined which ultimately leads to considerably misleading values. To provide a sense of the difference in magnitude between OLS and 3SLS coefficient estimates, *DISC* is referred to as an example. According to OLS estimates, an increase of *DISC* by one unit results in a 1.567 unit increase in Tobin's Q, whereas the 3SLS estimation results predict that an equivalent increase in *DISC* results in a 6.315

unit increase in Tobin's Q. Hence, the 3SLS elasticity is approximately four times higher than in the case of OLS.

With the exception of *REIT,* basically all control variables of equation 1 show the same coefficients as in the standard OLS regression model and are statistically significant at the 10%, 5% or 1% level. The change in sign for the *REIT* variable can be explained by the following intuition. The REIT-structure basically corresponds to a type of regulation that limits managerial latitude and thereby provides more security for shareholders. Assuming that the advantages of this regulation are largely captured by the principal corporate governance mechanisms may have caused *REIT* to become negative and insignificant.

On balance, it can be concluded from the results for equation (1) of table 16 that the previously developed hypotheses H_1, H_3 and H_6 can be confirmed, whereas hypotheses H_2, H_4 and H_5 have to be rejected. In other words, after taking into account the issue of joint endogeneity a smaller board of directors, a greater percentage of managerial ownership as well as a more transparent real estate-specific disclosure have a positive impact on firm value as determined by the capital market. Moreover, it is worth mentioning that the latter governance provision reveals the most significant coefficient and has the greatest value-increasing effect.

In addition to a significant impact of certain corporate governance mechanisms on firm value, columns (2) to (7) in the upper part of table 16 provide evidence for statistically significant interdependencies among various governance provisions. The significantly negative correlations in column (5) between *lnBSIZE* and *INST*, the significantly positive correlations between *INSIDER* and *LEV* in column (6) as well as between *DISC* and *INST* in column (5) indicate a complementary relationship between the respective provisions and therefore corroborate hypothesis H_7 of chapter 4.4. Institutional investors appear to be attracted by companies with smaller boards of directors. This implies that the belief of institutional investors is in line with the one of Lipton/Lorsch (1992), Jensen (1993) and Yermack (1996) who argue that small boards generally tend to operate more effectively. This hypothesis is further supported by previous research of Wu (2000) who documents empirical evidence for a decrease in board size after the engagement of active institutional investors. Complemen-

tarity is also suggested for the relationship between *INSIDER* and *LEV* which is consistent with empirical findings of Agrawal/Knoeber (1996). According to the 3SLS results, an increase in insider ownership suggests a greater use of debt. This may indicate that incentive alignment of managers in conjunction with external monitoring of lenders generally provides more effective corporate governance. The significantly positive relationship between *DISC* and *INST* points out that institutional investors on average prefer to invest in companies with more transparent real estate-specific reporting practices. This result is similar to the empirical findings of Ajinkya et al. (1999) and Healy et al. (1999) who document that sustained increases in overall corporate disclosure ratings result in higher levels of institutional ownership. Consequently, it can be inferred that the combination of both mechanisms contribute to a more disciplining governance structure.

Furthermore, there is evidence for substitution effects between various governance mechanisms, e.g. between *lnBSIZE* and *DISC* in column (7), between *INST* and *INSIDER* in column (4), between *LEV* and *BIND* in column (3) and between *DISC* and *lnBSIZE* in column (2), confirming hypothesis H_8 of chapter 4.4. The significantly positive relation between *lnBSIZE* and *DISC* shows that publicly traded real estate companies with larger boards of directors tend to have higher transparency with respect to their real estate-specific disclosure. The opposite relationship turns out to be significant as well. Accordingly, companies with better disclosure generally dispose of larger boards of directors. Therefore, it can be concluded that board size and disclosure serve as substitutes in a firm-specific corporate governance structure. The same interpretation holds for the significantly negative relationship between *INST* and *INSIDER*, indicating that monitoring of large and professional shareholders constitutes an alternative to insider ownership. Beiner (2005), for instance, also finds a negative but insignificant correlation between insider ownership and concentrated ownership. A final indication for substitutability is the significantly negative relation between *LEV* and *BIND*. It appears that a lower leverage ratio is compensated by a greater independence of the board and vice versa.

Referring to the issue of reverse causation, it remains interesting to see whether firm value, as measured by Tobin's Q, affects any of the principal cor-

porate governance mechanisms. The first row of table 16 with *Q* as endogenous explanatory variable provides a clear indication of reverse causality due to the significantly negative correlation with *INSIDER* at the 10% level. Thus, hypothesis H_9 of chapter 4.4 can also be confirmed. The finding seems to indicate that managers sell their shares as the stock price increases in order to lock in profits. Being the insiders of the company, they dispose of information that is not available to the public. Therefore, they are in a position that enables them to more adequately assess the value of the company. As a result, they will tend to sell their shares as the market value exceeds the perceived intrinsic value of the company.

The coefficients of the exogenous variables of equations (2) to (3), presented in the lower part of table 16, generally have the predicted sign but are not always statistically significant. As predicted, firm size has a positive coefficient in the *lnBSIZE*-equation. Nonetheless, the relation is statistically insignificant and therefore does not require further consideration. Similarly, *lnASSETS* reveals a positive but marginally insignificant coefficient in the *BIND*-equation. In contrast, *TENURE* is statistically negative at the 10% level, implying that the board of directors becomes less independent the longer the CEO is in office. This result supports previous findings of Hermalin/Weisbach (1988) and Ghosh/Sirmans (2003). Furthermore, *CEOPRES* shows a negative but insignificant coefficient. With respect to the *INSIDER*-equation, all control variables exhibit the expected sign except *NOFFICER* and *CEOPERF*. However, both coefficients are statistically insignificant. In accordance with Chung/Pruitt (1996), a highly significant positive correlation between *FOUNDER* and *INSIDER* can be documented. Thus, the existence of a founding CEO generally induces higher levels of managerial ownership. Focusing on the *INST*-equation, the only control variables revealing statistically significant coefficients include *LIQUID*, *NOBLOCK* and *REIT*. *LIQUID* is significantly negative at the 10% level which is largely consistent with the hypothesis of Holmström/Tirole (1993) and Maug (1998). Thereafter, greater liquidity implies less ownership concentration. In addition, there is a highly positive correlation between *NOBLOCK* and *INST* at the 1% significance level, supporting the intuition previously stated in chapter 5.3.3.3. Finally, the coefficient of *REIT* is statistically negative at the 1% level.

Consequently, it seems that on average REITs have lower levels of institutional ownership. Turning to the *LEV*-equation, it can be lined out that the coefficients of the control variables largely possess the predicted signs. Nevertheless, only three of them are statistically significant: *lnASSETS*, *ROA(t-1)* and *TENURE*. Consistent with Beiner et al. (2004), firm size is significantly positive correlated with leverage. This result is germane to the general argumentation of Smith/Watts (1992) and Rajan/Zingales (1995) that larger firms are able to take on more debt due to lower costs of financial distress. Moreover, *ROA(t-1)* is significantly negative related to *LEV* at the 10% level. As anticipated, a higher operating profitability entails lower debt ratios corroborating the pecking order theory of finance. Interestingly, *TENURE* is significantly negative at the 1% level, indicating that a company's leverage is generally less the longer the tenure of the CEO. In the last equation *ROA(t)* and *REIT* are the only control variables with a significant impact on the dependent variable *DISC*. In line with the assumption, forwarded in chapter 5.3.3.3, *ROA(t)* has a significantly positive effect on *DISC* which corresponds to the empirical findings of Lang/Lundholm (1993), Miller (2002) and Khanna et al. (2004). Accordingly, more profitable firms tend to provide a more transparent real estate-specific disclosure to the public. A striking result is the highly significant positive correlation between *REIT* and *DISC*. In support of the data in the descriptive statistics section, REITs generally provide more real estate-specific information in their annual reports, eventually resulting in a more transparent disclosure.

To alleviate any concerns about a potential misspecification of the system of equations, several specification tests are applied.[352] These include the Wald test, an overidentification test and the Hausman system specification test. The Wald test generally measures how close the unrestricted estimates come to satisfying the restrictions under the null hypothesis. It specifically verifies whether the single equations of the system actually have explanation content. If all coefficients of an equation are jointly zero there is indication that the equa-

[352] With regard to the OLS estimation adjusted R^2 was reported as a measure for the goodness-of-fit. In the case of instrumental variable estimation R^2 can be negative because the sum of squared residuals can be larger than the total sum of squares. Therefore, reporting R^2 does not appear to be very useful in 3SLS estimation. See also Wooldridge (2002), pp. 471f.

tion does not have explanation content. With respect to the simultaneous equation model of the present empirical study the Wald test for simultaneous significance of all coefficients rejects the null hypothesis of no explanation content at the 1% level for each equation of the system. Consequently, it can be assumed that all equations have certain explanation content.

The overidentification test[353] basically examines whether the instruments used in the regression are valid. In order to be considered as valid instruments, they have to be uncorrelated with the error terms, on the one hand, and correlated with the respective endogenous explanatory variable, on the other hand. Testing for overidentifying restrictions indicates that the instrumental variables used in the course of the 3SLS estimation, described above, are actually valid.

Finally, the Hausman system specification test[354] verifies whether the entire system of equations is specified correctly. This is particularly important for 3SLS estimation, since any misspecification in the single equations will be transmitted to all other equations of the system in the third stage of the estimation process.[355] Running the test for the whole system, the null hypothesis of no misspecification cannot be rejected providing an indication for a correct specification of the simultaneous equation model.

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[353] In order to test for overidentifying restrictions it is necessary to first estimate each structural equation of the system by 2SLS. The corresponding residuals are then regressed on all exogenous variables using OLS. Afterwards, the respective R^2 are multiplied by the number of observations to obtain the overidentification test statistic. If this test statistic exceeds e.g. the 5% critical value in the Chi^2 distribution with the number of overidentifying restrictions as degrees of freedom the null hypothesis of instrument validity must be rejected. The number of overidentifying restrictions equals the number of instrumental variables of the total system minus the number of regressors of the equation. For a comprehensive description of the implementation of the overidentification test it is referred to Wooldridge (2002), pp. 484ff.

[354] The Hausman system specification test compares 2SLS and 3SLS estimators under the null hypothesis of no misspecification. If the system of equations is specified correctly, 3SLS estimates are consistent and efficient, whereas 2SLS estimates are consistent but not efficient. The Hausman system specification test statistic is calculated as follows:

$$h = (\beta_{2SLS} - \beta_{3SLS})' [\mathrm{var}(\beta_{2SLS}) - \mathrm{var}(\beta_{3SLS})]^{-1} (\beta_{2SLS} - \beta_{3SLS}).$$

h is Chi^2 distributed with the number of unknown parameters in β as degrees of freedom. If this test statistic exceeds e.g. the 5% critical value in the Chi^2 distribution with the corresponding degrees of freedom the null hypothesis of no misspecification must be rejected. For a more detailed theoretical elaboration on the Hausman system specification test see Hausman (1978), Hausman (1983) and Judge et al. (1985).

[355] See Hausman (1983), p. 414; Judge et al. (1985), p. 617.

Overall, it can be concluded that the system of equations is correctly specified and therefore should provide reliable coefficient estimates. The detailed results of the respective tests are reported below the coefficient estimates in the lower part of table 16.

5.3.3.5 Robustness Check of 3SLS Results

As a robustness check on the 3SLS results, presented in the previous chapter, the system of equations is re-estimated using Market-to-Book as alternative measure for the market value of the firm. The corresponding results are exhibited in table 17.

Table 17: Coefficient Estimates from 3SLS Regressions with Market-to-Book and different Corporate Governance Mechanisms as Endogenous Variables

	Dependent Variable						
	MB	lnBSIZE	BIND	INSIDER	INST	LEV	DISC
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MB		0.014 (0.366)	-0.003 (-0.085)	**-0.052*** (-1.803)	-0.028 (-0.508)	0.008 (0.332)	**0.036*** (1.963)
lnBSIZE	**-1.607**** (-2.426)		-0.060 (-0.248)	-0.198 (-0.457)	**-0.712***** (-2.688)	-0.094 (-0.491)	**0.250***** (4.377)
BIND	0.328 (0.319)	-0.094 (-0.249)		-0.358 (-0.907)	-0.020 (-0.085)	-0.194 (-0.660)	0.170 (1.370)
INSIDER	1.274 (1.542)	-0.209 (-0.722)	0.205 (0.830)		-0.257 (-1.432)	**0.402**** (2.254)	-0.045 (-0.501)
INST	0.801 (1.263)	-0.146 (-0.585)	0.112 (0.592)	**-0.372**** (-2.328)		0.050 (0.330)	-0.031 (-0.414)
LEV	0.447 (0.442)	-0.031 (-0.089)	**-0.821**** (-2.577)	-0.156 (-0.389)	0.323 (1.335)		-0.014 (-0.126)
DISC	**11.312***** (6.331)	**2.382***** (3.801)	-0.680 (-0.904)	1.219 (1.024)	**1.924**** (1.991)	0.042 (0.066)	
lnASSETS	**-0.212*** (-1.830)	0.053 (1.219)	0.064 (1.598)	-0.051 (-0.556)	0.026 (0.768)	**0.054*** (1.825)	0.002 (0.164)
lnYEARS	**-0.142***** (-2.918)						
ROA (t-1)	**3.775***** (2.928)				0.354 (1.045)	**-0.430*** (-1.771)	-0.176 (-1.452)
ROA (t)	**-6.173***** (-10.987)				-0.098 (-0.320)		**0.245*** (2.600)
GROWTH					0.004 (1.433)		
VOLA	**0.021*** (2.094)			-0.004 (-1.079)		0.005 (1.424)	
LIQUID					-0.093 (-1.590)	-0.051 (-0.893)	-0.009 (-0.703)
NOFFICER				-0.014 (-0.547)			
NOBLOCK					**0.092***** (5.688)		
TENURE			-0.007 (-1.636)			**-0.008***** (-2.976)	
FOUNDER				**0.210***** (3.228)			
CEOPRES			-0.101 (-1.449)				
CEOPERF				-0.172 (-0.962)			
DIVERS	**-0.197**** (-2.101)			-0.091 (-1.495)			
INTERN							**0.064*** (1.869)
REIT	**-0.687***** (-2.582)	**-0.208*** (-1.864)	0.074 (0.738)	-0.156 (-0.945)	**-0.173*** (-1.723)	0.031 (0.409)	**0.082***** (3.166)
Constant	**3.771**** (2.058)	-0.274 (-0.358)	0.299 (0.487)	**1.794*** (1.692)	-0.133 (-0.235)	-0.399 (-0.752)	0.322 (1.327)
BSYSTEM	+	+	+	+	+	+	+
COUNTRY	+	+	+	+	+	+	+

continued

Wald Test	**184.775*** **	**201.067*** **	**109.036*** **	**55.460*** **	**113.007*** **	**44.074*** **	**289.887*** **
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Note: The table shows the coefficient estimates from 3SLS regressions with Market-to-Book and different corporate governance mechanisms as endogenous variables. The variables are defined in tables 7 and 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. All t-values are reported in parentheses below the respective coefficients. *, ** and *** respectively indicate significance at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

Comparing the 3SLS results for the *Q*-equation in table 16 with the ones for the *MB*-equation in table 17, it can be observed that board size and disclosure stay statistically significant. While the significance level of *DISC* remains unchanged at the 1% level, *lnBSIZE* turns significant at the 5% level. As opposed to the *Q*-equation, *INSIDER* is marginally insignificant in the *MB*-equation. With respect to the control variables, the results are largely robust to a substitution of *Q* with *MB*. Merely, some control variables, such as *lnASSETS*, *lnYEARS* and *DIVERS* reveal a change in significance level. In addition, *REIT* becomes significant at the 1% level.

Turning to the other equations of the system, one can point out that the variables generally do not change qualitatively with the exception of *TENURE* in the *BIND*-equation, *LIQUID* in the *INST*-equation as well as *MB* and *INTERN* in the *DISC*-equation. While *TENURE* and *LIQUID* marginally cease to be significant in the *BIND*- and *INST*-equation, respectively, *MB* and *INTERN* turn marginally significant in the *DISC*-equation.

6 Summary and Concluding Remarks

6.1 Summary of Essential Findings

The need for a well-functioning corporate governance system, which is basically composed of an interdependent set of internal and external mechanisms, stems from the separation of corporate ownership and corporate control as well as the related conflicts of interest between shareholders and managers that are subject to agency theory. In a changing capital market environment in which investors highly appreciate better protection of shareholder rights and increasingly demand tighter controls on managerial behavior, corporate governance has become a crucial success factor for companies that are dependent on external finance.

Parallel to its increasing relevance in practice, corporate governance has attracted major attention in academic literature. Although, a comprehensive and well-developed theory on the complex nature of corporate governance does not yet exist, numerous theoretical and empirical studies, predominantly originating from finance literature, have contributed to a better understanding on the topic. However, despite the fact that publicly traded real estate companies provide a unique experimental laboratory in corporate governance research due to a number of peculiarities arising from the characteristics of real estate assets and the regulatory requirements in connection with the REIT structure, corporate governance in general as well as its impact on firm value remain largely unexplored in real estate literature. Most of the existing studies merely focus on US REIT samples, investigate only single aspects of a complex corporate governance system in isolation and do not account for interdependencies among different corporate governance mechanisms.

This thesis supplements contemporary real estate literature by theoretically and empirically analyzing the impact of corporate governance on the market valuation of publicly traded real estate companies across four principal European real estate capital markets – the UK, France, the Netherlands and Germany – while addressing major econometric shortcomings of previous corporate governance studies, including omitted variable bias, endogeneity and reverse causality.

Based on contemporary corporate governance literature and the theoretical argumentation in chapter 3.3 that market competition and the market for corporate control do not work properly for publicly traded real estate companies, six widely-accepted principal corporate governance mechanisms are identified and empirically examined. These are board size, board independence, insider ownership, institutional ownership, leverage and transparency of real estate-specific disclosure. In order to adequately consider any bi-directional interdependencies among the different mechanisms as well as between the single mechanisms and firm value, a simultaneous equation model is specified, whereas firm value, as proxied by Tobin's Q, and each of the corporate governance mechanisms serve as a dependent variable in one of the equations and as an explanatory variable in all other equations.

Estimating this system of equations simultaneously using 3SLS reveals that board size, insider ownership and the transparency of real estate-specific disclosure are the corporate governance mechanisms that have a significant impact on the market valuation of publicly traded real estate companies. Board size is significantly negative correlated with firm value at the 10% level, corroborating the hypothesis of Lipton/Lorsch (1992), Jensen (1993) and Yermack (1996) that smaller boards tend to operate more effectively and hence perform a better monitoring function. In contrast, insider ownership is significantly positive related to firm value at the 5% level. This result is supportive of the convergence-of-interest hypothesis presented by Jensen/Meckling (1976), indicating that higher levels of managerial ownership help to align the interests of managers with those of shareholders and thereby reduce agency costs. Finally, transparency of real estate-specific disclosure is significantly positive related to firm value at the 1% level. It not only reveals the most significant coefficient but also appears to be the economically most relevant corporate governance mechanism for it has the greatest value-increasing effect. This empirical evidence is intuitive and supports the argumentation forwarded in chapter 3.3.1 that the transparency of disclosure is particularly important to publicly traded real estate companies due to the comparably high level of intransparency in real estate asset markets.

Consistent with Agrawal/Knoeber (1996) and Beiner et al. (2006), among others, this study further provides evidence for complementary and substitution effects among single corporate governance mechanisms. A complementary relationship, implying that two mechanisms jointly provide more effective corporate governance, can be identified between board size and institutional ownership, insider ownership and leverage as well as between transparency of disclosure and institutional ownership. By contrast, substitutability can be observed for the relationship between board size and transparency of disclosure, institutional ownership and insider ownership as well as between leverage and board independence. These mechanisms serve as substitutes in the corporate governance structure of publicly traded real estate companies. In other words, where one of the mechanisms is used more the other is used less providing the same or a similar disciplining effect.

Ultimately, there is evidence for reverse causality which is reflected by the significantly negative correlation between Tobin's Q and insider ownership. This result implies that managers of publicly traded real estate companies in Europe trade upon their informational advantage. Hence, they tend to sell shares in the company as the market value exceeds the perceived intrinsic value of the company.

Figure 20: Comparison of Results with Empirical Real Estate Corporate Governance Literature

Authors	Sample	Methodology	Measure of Firm Value	Results	Comparison
Friday/Sirmans (1998)	n = 135 1980 - 1994 (USA)	Empirical study using multivariate regression (OLS)	Market-to-Book	▪ Greater board independence (up to 50%) and higher levels of insider ownership are associated with higher firm values of US REITs	+
Friday et al. (1999)	n = 675 1980 - 1994 (USA)	Empirical study using multivariate regression (OLS)	Market-to-Book	▪ Insider ownership (up to 5%) is associated with higher M/B-ratios of US equity REITs, thereafter M/B-ratios decline	Ø
Capozza/Seguin (2003)	n = 75 1985 - 1992 (USA)	Empirical study using multivariate regression (WLS)	Tobin's Q	▪ Evidence that higher levels of insider ownership are associated with a higher valuation of US REITs	+
Hartzell et al. (2004)	n = 66 1992 - 2000 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ No significant relationship between governance data from proxy-statements and valuation of US equity REITs	Ø
Bauer et al. (2006)	n = 134 - 228 2002 - 2005 (USA)	Empirical study using multivariate regression (OLS)	Tobin's Q	▪ Significantly positive relationship between ISS and GMI corporate governance indices and valuation of US REITs	+
Han (2006)	n = 156 1994 - 2000 (USA)	Empirical study using multivariate regression (2SLS)	Tobin's Q	▪ Significant relationship between valuation of US equity REITs and insider ownership that is positive at low levels but turns negative at high levels of insider ownership	Ø
present study	n = 110 2006/2007 (GB, F, NL, D)	Empirical study using multivariate regression (3SLS)	Tobin's Q	▪ Smaller boards, higher levels of insider ownership and greater transparency of real estate-specific disclosure are associated with higher market values of listed property companies	

Ø No consistency between empirical results + (Partial) consistency between empirical results

Source: Own illustration.

The empirical findings of this dissertation lend support to some of the previous corporate governance studies focusing on US REIT samples (see figure 20), as for instance Friday/Sirmans (1998) and Capozza/Seguin (2003) who document a significantly positive association between insider ownership and market valuation or Bauer et al. (2006) who provide evidence that corporate governance, as measured by an aggregate score, has a positive impact on firm value.

By contrast, the findings do not support Hartzell et al. (2004) who find no significant relationship between corporate governance and firm value, even though they apply a similar set of corporate governance mechanisms. However, it has to be pointed out that Hartzell et al. (2004) apply OLS estimation methodology, which leads to biased estimates in the presence of endogeneity of corporate governance variables. This might be a reasonable explanation for the inconsistency of their results.

6.2 Concluding Remarks

The empirical results of this study suggest that corporate governance does, in fact, matter in European public real estate markets. Capital market participants investing in listed property companies particularly seem to appreciate smaller boards of directors, higher levels of managerial ownership and greater transparency of real estate-specific disclosure. The implications of these findings for top-executives of publicly traded real estate companies, on the one hand, and real estate investors, on the other hand, can be summarized as follows.

To increase shareholder value, managers of listed property companies are recommended to support any efforts to reduce board size, to implement equity-based compensation packages or to increase their equity stake in the company and to improve transparency of real estate-specific disclosure by complying with the EPRA Best Practice Policy Recommendations. The latter is particularly worthwhile since it has the greatest impact on current market valuation.

Real estate investors, by contrast, may adapt their investment strategy to account for the above listed governance characteristics which are generally perceived to provide effective corporate governance in the public real estate sector. Furthermore, those investors with sufficient voting power may use the information to actively participate in the process of improving the corporate governance structure of listed property companies in which they are invested with the objective to increase the total value of their portfolios.

After all, it has to be pointed out that good firm-specific corporate governance structures will not be able to completely abandon agency risks. In the end, it still depends on the mental attitude of the management whether publicly traded real estate companies are directed in the best interest of shareholders. Therefore, it is not a question of meticulously complying with certain corporate governance codes or standards but a question of whether managers are profoundly interested in providing transparency and creating long-term shareholder value. Though, good corporate governance cannot compensate bad business models or strategic failure, it helps companies to restore investor confidence and to access capital markets at better terms, eventually reducing its cost of

capital. This is an essential advantage for companies that want to succeed in an increasingly aggravating competition for international capital.

Despite the insightful findings of this study on the corporate governance structure of publicly traded real estate companies in Europe, a number of possible avenues remain to be explored by future research. To verify the empirical results of this study and to obtain even more reliable insights into the causal relationship between corporate governance and the market valuation of publicly traded real estate companies over a certain period of time, it would be interesting to conduct a similar research study using panel data. However, at present the availability of historical accounting data that can be compared across European and International companies is limited to the extent that a uniform accounting system has only been in place since 2006, when publicly traded companies were legally required to report in accordance with IFRS for the first time. Therefore, it will still take some years for such a study to be feasible.

Moreover, future research may extend the European sample to account for publicly traded real estate companies from the US and Australia to further investigate any regional differences with regard to the corporate governance structure of listed property companies.

In addition, it would be valuable to gain a deeper understanding on the differences between the corporate governance structure of REITs and Non-REITs. This, however, necessitates the use of larger samples that permit to run separate regressions for each type of listed property vehicle.

Eventually, future research should examine the hostile takeover activity of publicly traded real estate companies outside the US in more detail to shed some more light on the functioning and effectiveness of the market for corporate control in the public real estate sector.

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Appendix

Appendix 1: List of Publicly Traded Real Estate Companies in the Sample

No.	Company Name	Country
1.	ASSURA	UK
2.	BIG YELLOW	UK
3.	BRITISH LAND	UK
4.	BRIXTON	UK
5.	CAPITAL & REGIONAL	UK
6.	CLS HOLDINGS	UK
7.	DAEJAN HOLDINGS	UK
8.	DAWNAY DAY CARPATHIAN	UK
9.	DERWENT LONDON	UK
10.	DEVELOPMENT SECURITIES	UK
11.	GRAINGER	UK
12.	GREAT PORTLAND ESTATES	UK
13.	HAMMERSON	UK
14.	HELICAL BAR	UK
15.	HIGHCROFT INVESTMENTS	UK
16.	INVISTA FOUNDATION PROPERTY TRUST	UK
17.	ISIS PROPERTY TRUST	UK
18.	ISIS PROPERTY TRUST II	UK
19.	LAND SECURITIES	UK
20.	LEWIS CHARLES SOFIA PROPERTY FUND	UK
21.	LIBERTY INTERNATIONAL	UK
22.	LONDON & ASSOCIATED PROPERTIES	UK
23.	LONDON TOWN	UK
24.	MAPELEY	UK
25.	MARYLEBONE WARWICK BALFOUR	UK
26.	MCKAY SECURITIES	UK
27.	MINERVA	UK
28.	MUCKLOW	UK
29.	PANTHER SECURITIES	UK
30.	QUINTAIN ESTATES & DEVELOPMENT	UK
31.	RAVEN RUSSIA	UK
32.	SEGRO	UK
33.	SHAFTESBURY	UK
34.	SOVEREIGN REVERSIONS	UK
35.	ST MODWEN PROPERTIES	UK
36.	TOWN CENTRE SECURITIES	UK
37.	UNITE GROUP	UK
38.	WARNER ESTATE	UK
39.	WORKSPACE GROUP	UK
40.	ACANTHE DEVELOPPEMENT	France
41.	AFFINE	France
42.	ALTAREA	France
43.	CAPELLI	France
44.	CEGEREAL	France
45.	COMPAGNIE LUCETTE	France
46.	DOCKS LYONNAIS	France
47.	EUROSIC	France
48.	FIDUCIAL REAL ESTATE	France
49.	FONCIERE DES MURS	France

continued

No.	Company Name	Country
50.	FONCIERE DES REGIONS	France
51.	FONCIERE DEVELOPPEMENT LOGEMENTS	France
52.	FONCIERE EURIS	France
53.	FONCIERE INEA	France
54.	FONCIERE PARIS ILE DE FRANCE	France
55.	GECIMED	France
56.	GECINA	France
57.	ICADE	France
58.	ICADE EMGP	France
59.	ICADE FONCIERE DES PIMONTS	France
60.	IPBM	France
61.	KLEPIERRE	France
62.	LUCIA	France
63.	MB RETAIL EUROPE	France
64.	MERCIALYS	France
65.	NEXITY	France
66.	PAREF	France
67.	SIIC DE PARIS	France
68.	SILIC	France
69.	SOCIETE DE LA TOUR EIFFEL	France
70.	SOCIETE FONCIERE LYONNAISE	France
71.	UNIBAIL	France
72.	VECTRANE	France
73.	ZUEBLIN IMMOBILIERE	France
74.	CORIO	Netherlands
75.	EUROCOMMERCIAL PROPERTIES	Netherlands
76.	NIEUWE STEEN INVESTMENTS	Netherlands
77.	RODAMCO EUROPE	Netherlands
78.	VASTNED OFFICES INDUSTRIAL	Netherlands
79.	VASTNED RETAIL	Netherlands
80.	WERELDHAVE	Netherlands
81.	AAA AKTIENGESELLSCHAFT ALLGEMEINE ANLAGEVERWALTUNG	Germany
82.	AIG INTERNATIONAL REAL ESTATE	Germany
83.	ALTA FIDES	Germany
84.	ANTERRA	Germany
85.	BAUVEREIN HAMBURG	Germany
86.	COLONIA REAL ESTATE	Germany
87.	DESIGN BAU	Germany
88.	DEUTSCHE EUROSHOP	Germany
89.	DEUTSCHE REAL ESTATE	Germany
90.	DEUTSCHE WOHNEN	Germany
91.	DGAG DEUTSCHE GRUNDVERMOEGEN	Germany
92.	DIC ASSET	Germany
93.	DIH DEUTSCHE IMMOBILIEN HOLDING	Germany
94.	FRANCONOFURT	Germany
95.	GAG IMMOBILIEN	Germany
96.	GAGFAH	Germany
97.	HAGEDA	Germany
98.	HAHN	Germany
99.	HAMBORNER	Germany
100.	IFM IMMOBILIEN	Germany

continued

No.	Company Name	Country
101.	IMW IMMOBILIEN	Germany
102.	IVG IMMOBILIEN	Germany
103.	OTTO STUMPF	Germany
104.	PATRIZIA IMMOBILIEN	Germany
105.	RSE GRUNDBESITZ	Germany
106.	STILWERK REAL ESTATE	Germany
107.	TAG TEGERNSEE	Germany
108.	VIB VERMOEGEN	Germany
109.	VIVACON	Germany
110.	WESTGRUND	Germany

Source: Own illustration.

Appendix 2: Pearson Correlation Matrix of the Continuous Exogenous Variables

Variable	lnASSETS	lnYEARS	ROA (t-1)	ROA (t)	GROWTH	VOLA	LIQUID	NOFFICER	NOBLOCK	TENURE
lnASSETS	1.000 (--/--)									
lnYEARS	**0.328***** (3.608)	1.000 (--/--)								
ROA (t-1)	0.002 (0.018)	**0.177*** (1.864)	1.000 (--/--)							
ROA (t)	**0.178*** (1.875)	-0.062 (-0.641)	**0.342***** (3.782)	1.000 (--/--)						
GROWTH	-0.023 (-0.239)	**-0.161*** (-1.695)	**-0.251***** (-2.695)	-0.068 (-0.712)	1.000 (--/--)					
VOLA	-0.080 (-0.832)	0.098 (1.022)	0.018 (0.189)	-0.015 (-0.157)	0.034 (0.358)	1.000 (--/--)				
LIQUID	**0.469***** (5.515)	**0.230**** (2.454)	**0.238**** (2.551)	**0.203**** (2.151)	-0.149 (-1.565)	-0.072 (-0.752)	1.000 (--/--)			
NOFFICER	**0.455***** (5.314)	-0.005 (-0.056)	**0.158*** (1.667)	**0.194**** (2.054)	-0.106 (-1.106)	-0.098 (-1.023)	**0.414***** (4.721)	1.000 (--/--)		
NOBLOCK	-0.088 (-0.918)	-0.118 (-1.231)	0.047 (0.630)	0.113 (0.184)	-0.049 (-0.513)	-0.111 (-1.159)	**0.299***** (3.257)	0.066 (0.687)	1.000 (--/--)	
TENURE	0.080 (0.833)	**0.244**** (2.615)	**0.201**** (2.135)	0.076 (0.790)	-0.127 (-1.331)	-0.017 (-0.181)	**0.183*** (1.932)	0.057 (0.596)	0.051 (0.530)	1.000 (--/--)

Note: The table shows the correlation coefficients between the continuous exogenous variables. The respective t-values are presented in parentheses below the coefficients. The variables are defined in table 8. The sample consists of 110 publicly traded real estate companies from the UK, France, the Netherlands and Germany in 2006/07. *, ** and *** indicates that the respective correlation coefficient is statistically significant at the 10%, 5% and 1% level. Significant results (at 10% or better) are shown in boldface.

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